



The Alberta Journal of Educational Research

Volume XX, No. 1

March, 1974

CONTENTS

Student performance, attitude and self-esteem in open-area and self-contained classrooms	1
<i>D. I. Allen</i>	
Quick word lists for Canadian readers	8
<i>C. D. Pennock</i>	
Partly tailored examinations	15
<i>R. Bedard</i>	
The provision of substitute teachers	24
<i>E. A. Holdaway & J. A. Bentham</i>	
Predicting success in elementary algebra	34
<i>R. G. Mogull & W. Rosengarten, Jr.</i>	
An examination of the illusion phenomenon in Soviet set theory: An experimental critique	39
<i>D. Cowper & L. Stewin</i>	
Factor analysis in the investigation of multidimensional educational problems	46
<i>N. Mehra</i>	
Popular images of the school	59
<i>R. A. Carlton</i>	
The Russian Sunday schools: An experiment in voluntarism	75
<i>J. McLeish</i>	

FACULTY OF EDUCATION
The University of Alberta

D. I. ALLEN

Simon Fraser University

Student Performance, Attitude and Self-esteem in Open-area and Self-contained Classrooms

The increasing interest in and availability of "open-area" education is based largely on descriptive and anecdotal evidence. This paper attempts an empirical examination of the effectiveness of open-area classrooms (at an elementary grade level) in British Columbia. Self-contained classrooms were utilized as a control group. The dependent variables examined were academic achievement, attitude toward school, and self-esteem. The open-area environment was found to be associated with better language development at a grade five level. No clear evidence was obtained which supports the often-cited advantages of the open-area classroom in the area of attitudes and self-esteem. (Dr. Allen is Director of Professional Programs in the Faculty of Education, Simon Fraser University.)

A recent rapid increase in the number of open-area classrooms in British Columbia (Allen, 1973) has been associated with widespread debate over their effectiveness. Reliable evidence on the question has not been available though the attitudes of teachers and administrators involved have generally been favorable. A reasonable projection from studies concerning other variations in school organization (McLoughlin, 1967) would be that open-area classrooms would make no difference. Such projections may be somewhat comforting to some who are afraid to change, but are no substitute for direct evaluations. Evaluations of open areas in other places are equally unhelpful.

Most accounts have been descriptive and anecdotal. They suggest that children in these situations are actively involved in decision-making and to varying degrees pace and style their own learning (Barth, 1970; Burnham, 1970; Gross, 1970; Rogers, 1972; Staples, 1971; McNutt, 1969; Cutler, 1969; Eberle, 1969; and Eberle & Baugham, 1965). A recently published review of 22 of these studies by the Metropolitan Toronto School Board indicated conflicting evidence on the effects of open area classrooms on academic performance. Significantly, few studies (York

County Board of Education, 1971; Gardner, 1966; McRae, 1970; Schneir, 1971) offer empirical data to measure cognitive achievement in open areas. Evidence of this type is usually related to 'grouping' or 'team teaching' rather than the broader open area concept as independent variables (Franseth & Koury, 1966; Fraenkel, 1967). However, in each instance the literature is inconclusive.

In studies of students' and teachers' attitude to school, findings were generally in favor of open-area classrooms. Pritchard and Moodie, 1971, Krutchen, 1971, Hersom and MacKay, 1971, indicate that open-areas provide a learning climate which positively encourages independent and innovative student behavior. However, the data on which these conclusions were based were sufficiently subjective to make confident extrapolations to other situations unwise.

In this study an attempt was made to determine whether open-area classrooms as presently organized in British Columbia are associated with higher academic achievement, better attitudes toward school and higher self-esteem than self-contained classrooms.

Method

Samples of open-area and self-contained classrooms were selected at grade three and grade five levels in the two school districts in the province with the largest number of open-area classrooms, Kamloops and Vancouver. The original design called for random selection of four self-contained and four open-area classroom equivalents at each level in each district. A classroom equivalent was defined as the group of students who were assigned to one teacher for home room activities. Where this assignment was not done, all students in the open area were tested, the number of students per teacher was calculated, and a group of that size selected at random. Several of the open-area schools had adopted alternatives to standard grade level grouping. In these cases school staff identified students who would have been at grade three or grade five level in schools operating on a more conventional basis. As a means of minimizing a possible Hawthorne effect and ensuring that possible difference could be associated with the difference in environment, teachers and students who had not been in their present situation (either open-area or self-contained classrooms) for at least one full year were excluded from the study. This condition had the effect of reducing the available population of open-area classrooms and it became impossible to adhere strictly to the policy of random selection.

In both districts, lists of open-area classrooms and teachers were compiled by district personnel. Teachers who had been in their present situation less than one year were removed from the lists, and random selection was made from those who remained. The schools in which open-area classes and teachers had been selected were matched by schools with self-contained classrooms at the corresponding level on the basis of socio-economic status, using data provided by district personnel. Lists of classrooms and teachers in these schools were compiled, and a corresponding sample selected. In most cases, the available population of classes and teachers was so small that the term random may be mis-

leading. In a couple of cases the final selection was made from an available pool of only one or two teachers.

Students completed batteries of tests administered by their regular classroom teachers following directions given by the researcher. Tests selected were:

Grade 3

Cooperative Primary Tests, Form 23 B

Subtests for Listening
 Mathematics
 Reading

School Sentiment Index—Primary Level (Instructional Objectives Exchange, 1970)

Subtests for Teacher
 School Subjects
 Social Structure and Climate
 Peer
 General

Self-Appraisal Scale (Davidson & Greenwood)

Grade 5

Stanford Achievement Test, Intermediate II Battery, Form Y

Subtests for Word Meaning
 Paragraph Meaning
 Arithmetic Computation

School Sentiment Index—Intermediate Level

Subtests for Teacher
 Learning
 Social Structure and Climate
 Peer
 General

Self-Appraisal Scale

For statistical analysis the scores of students in both districts were combined.

One-way analysis-of-variance was used to determine the acceptability of the null hypothesis that there would be no significant differences between the mean scores for open-area and self-contained classrooms at either grade three or grade five level on any of the above tests of achievement, attitude and self-esteem. Differences were accepted as statistically significant at the .05 confidence level.

Since the study concerned type of school organization, schools rather than individual students were considered the appropriate units of comparison. Thus although there were 792 students involved in the study, 437 at grade three level and 355 at grade five level, the sample size was only 14 for grade three and 15 for grade five (The numbers were reduced below the planned 16 in each case because of difficulties in finding open-area classrooms which met all the conditions for inclusion.). With samples

of this size, F values had to exceed 3.73 before differences could be considered significant at the .05 level.

Results

Results are set out in Tables 1, 2, and 3. At grade three there were no significant differences on achievement tests or on the self-appraisal scale, and only one difference on the attitude subtests. Grade three children in the sample of open-area schools had more favorable attitudes (as measured by the School Sentiment Index) toward their teachers than those in the self-contained classrooms.

At grade five level the open-area students performed significantly better than those in self-contained classrooms on two of the three achievement subtests, but appeared to have less favorable attitudes toward learning. Differences on all other subtests were not significant.

TABLE 1
MEAN SCORES ON ACHIEVEMENT SUBTESTS

	Open Area	Self-Contained	F
Grade Three (N = 14)			
Listening	31.69	32.47	0.15
Reading	30.47	30.63	0.006
Arithmetic	33.83	33.89	0.0006
Grade Five (N = 15)			
Word Meaning	53.06	47.10	5.0 *
Paragraph Meaning	53.37	47.23	4.55*
Arithmetic Computation	44.11	41.95	0.58

* $p < .05$

TABLE 2
MEAN SCORES ON ATTITUDE SUBTESTS

	Open Area	Self-Contained	F
Grade Three (N = 14)			
Teacher	5.01	4.64	3.93*
School Subjects	4.77	4.62	0.14
Social Structure & Climate	3.37	3.47	0.11
Peer	3.30	3.47	0.65
General	4.51	4.04	3.39
Grade Five (N = 15)			
Teacher	24.82	24.12	0.22
Learning	3.09	3.58	3.74*
Social Structure & Climate	11.17	10.82	0.22
Peer	7.87	7.30	1.19
General	6.72	6.51	0.32

* $p < .05$

TABLE 3
MEAN SCORES ON SELF-APPRAISAL SCALE

	Open Area	Self-Contained	F
Grade Three (N = 14)	32.47	32.64	0.01
Grade Five (N = 15)	31.57	31.44	0.007

Discussion

The results of this study must be interpreted in the light of several factors which may affect their generalizability.

1. The sample was small and limited to two school districts in British Columbia. It would be foolish to try to extrapolate from these findings with any confidence to other districts and provinces where teaching procedures and conditions may differ. However, the results should not be too lightly dismissed. A small sample has the effect of increasing the size of difference needed for results to be considered significant. Thus differences that were found are not only statistically significant but substantial enough to warrant careful consideration by those responsible for school planning.

2. Departures from randomness in sample selection increase the dangers of generalizing from these data. As indicated above, it was considered necessary to eliminate students and the classes of teachers in their first year in an open area in order to establish any kind of causal relationship between classroom type and student performance. This had the effect of reducing the population from which the sample might be selected and introduced another bias in the direction of stability. In fact, turnover of teachers (and in some of the schools, students) is fairly rapid and newness is part of the true picture.

3. Open areas are still considered to be innovations and to some extent experimental. It is not unlikely that in their present stage of development there is something of a Hawthorne effect in operation leading to an increase in active involvement and expectation of success. This factor, if present, would not negate the findings favorable to open-area classrooms, but might indicate that they could disappear if open-area classrooms cease to be considered exceptional by those teaching and studying in them.

4. Neither open-area nor self-contained classrooms should be considered as "ideal" types. The study was conducted in ongoing classrooms with all their stresses, uncertainties, triumphs and disappointments. It was not a study of the potential of open areas, but of the present performance of students in the sample schools. There were "progressive" and "conservative" elements in the programs in both kinds of classrooms. As an adjunct to the study Dr. Sheila O'Connell observed student activities in grade three open-area and self-contained classrooms in the Vancouver sample paying particular attention to the development of listening skills. She found little attention given to these skills in either type of school and

no difference in listening skill oriented activities between the programs of open-area and self-contained classrooms.

Conclusion

The learning which occurs in classrooms is attributable not just to the physical environment but to interactions of people and programs with it. Changes in the physical environment can lead to involuntary modifications in teacher and student behavior and also create possibilities of different intended patterns of utilization. This study has been an attempt to determine whether the net effect of both kinds of change is productive. The results indicate that so far as academic achievement is concerned, the open environment was associated with better language development at grade five level. There were no apparent differences for grade three students. This does not necessarily mean that open areas have no facilitative effect in the lower grades. It would be possible to interpret the results as indicating a cumulative effect over a number of years leading to observable differences in performance in the upper grades. However, such a conclusion must be tentative and would need to be tested in a longitudinal study.

Findings with regard to attitudes and self-esteem were contradictory and appear inconclusive. This should be a matter of some concern to teachers in the open-area classrooms. The rationale for open areas and the advantages claimed for them include better opportunities for individualizing instruction, team teaching, flexible grouping and personal attention to students. It seems that these potential advantages, in the sample schools at least, are not yet reflected in attitudes of students to various aspects of their schooling, or in enhanced self-esteem. This finding is at variance with the results of some other studies reviewed by the Metropolitan Toronto School Board and suggests that a detailed analysis of the operation of open-area and self-contained classrooms might be productive.

The research reported here was supported by a grant from the Educational Research Institute of British Columbia.

References

- Allen, D. I. *Correlates of teachers' perceptions of success in open area schools*. Report No. 73:6, Educational Research Institute of British Columbia, 1973.
- Attitude Toward School K-12*. Los Angeles, Instructional Objectives Exchange, 1970, pp. 25-44.
- Barth, R. S. When children enjoy school—Some lessons from Britain. *Childhood Education*, 1970, 46, 195-200.
- Burnham, B. *A day in the life-case studies of pupils in open plan schools*. Research Office, Division of Planning and Development, York County Board of Education, 1970.
- Cutler, M. H. This one-room is anything but antiquated. *American School Board Journal*, 1969, 46, pp. 17-20.
- Davidson, H. H., & Greenberg, J. W. *School achievers from a deprived background*. USOE Project N. 2805, Contract No. OE-5-10-132. New York: The City College of the City University of New York, 1967.
- Eberle, R. F. The open space school. *The Clearing House*, September, 1969, 44, pp. 23-28.

Student Performance, Attitude and Self-esteem

- Eberle, R. F., & Baugham, M. D. The open classroom. *The Clearing House*, March, 1965, 39, pp. 387-392.
- Fraenkel, J. A comparison of achievement between students taught by a teaching team and students taught in traditional classes on a standardized examination in U.S. history. *Journal of Educational Research*, 1967, 61 (1), pp. 43-46.
- Franseth, J. & Koury, R. *Survey of research on grouping as related to pupil learning*. U.S. Department of Health, Education and Welfare, 1966.
- Gardner, D. E. *Experiment and tradition in primary schools*. London: Methuen, 1966.
- Gross, B., & R. A little bit of chaos. *Saturday Review*, May 16, 1970, 53.
- Hersom, N., & McKay, D. *A study of open area schools in Edmonton school district*. Staff Study, University of Alberta, Edmonton Public Schools Board, 1971.
- Krutchén, R. A survey of teacher perceptions of open-area schools. M. Ed. Thesis, University of Calgary, November, 1971.
- McLoughlin, W. P. *The nongraded school—A critical assessment*. New York: The University of the State of New York, September 1967.
- McNutt, M. Open space—Room to grow in. *Arbos*, May-June 1969. pp. 4-8.
- McRae, B. C. *The effect of open-area instruction on reading achievement*. Department of Research and Special Services, Board of School Trustees, Vancouver, June 30, 1970.
- Metropolitan Toronto School Board, Study of Educational Facilities. *Academic Evaluation—An Interim Report*, Toronto, Ontario, 1971.
- Pritchard, D. L., & Moodie, A. G. *A survey of teacher opinions regarding open areas*. Vancouver, B.C., Vancouver School Board (Research Report, 1971-06).
- Rogers, V. Open schools in the British model. *Educational Leadership*. 1972, pp. 401-404.
- Schneir, W. & M. The joy of learning—In the open corridor. *New York Times Magazine*, April 4, 1971.
- Staples, I. E. Open space in education. *Educational Leadership*, 1971. pp. 458-463.
- York County Board of Education. Division of Planning and Development. *Reading and mathematics achievement of Grade 1 pupils in open-plan and architecturally conventional schools*, 1971 (Studies of Open Education No. 5).

C. D. PENNOCK

University of British Columbia

Quick Word Lists for Canadian Readers

Recent computer-processed word lists are described, as well as several derivatives as supplements or replacements for the Dolch Sight Word Vocabulary. Some "quick" word lists used for the assessment of sight word knowledge appear, however, to have less curricular validity, since based on word counts of more than thirty years ago. Four Canadian Quick Word Lists presented are referenced to Canadian reading series and to contemporary literature. Specific recommendations are made towards the effective administration of the lists and to utilization of data in the assessment of sight word knowledge and word attack skills. (Dr. Pennock is Assistant Professor the Faculty of Education, University of British Columbia.)

Substantive word lists can be traced back to Thorndike's *Teacher's Word Book* (1921), containing 10,000 words taken from children's literature, newspapers, textbooks, classics, and adult correspondence.

In recent years computer technology has facilitated the production of several comprehensive lists. Kucera and Francis (1967) *Computational Analysis of Present-Day American English* consists of 50,406 words drawn from fifteen genres of adult reading matter such as the press, religion, fiction, science, humor, etc. The words are arranged in two lists—one alphabetical and one in descending order of frequency.

John B. Carroll, Davies and Richman (1971) have produced a list based on 10,000 samples of 500 words each (5,000,000 words), drawn from 1,000 books from curriculum materials grades three to eight. Data are provided on total frequency of each word as well as frequency at each grade level, although the words are not assigned to grade levels.

Harris and Jacobson (1972), after analysis of approximately 4,500,000 words from 14 series of elementary school texts produced several lists including: 1) a graded Core List of 5,167 words found in at least three of the six basal series analyzed; 2) a Content List of 805 technical vocabulary found in English, Science, Mathematics and Social Studies texts. Comprehensive word lists can be used: 1) in comparing the vocabulary

of different genres of books to determine appropriate readability; 2) as guides in the writing of instructional materials; 3) as guides to essential word instruction and assessment.

Short Lists

Probably the most widely known of the abbreviated vocabulary lists has been the *Basic Sight Vocabulary* (of 220 words), developed by Dolch (1936). Since then numerous short basic sight word lists have been published including Fry's (1960) 300 "*Instant Words*". More recent short lists have been based on the computer vocabulary studies previously described. Johnson (1971) has prepared a list of the 220 most frequent words from Kucera-Francis (1967). Otto and Chester (1972) have proposed a sight word list of the 500 words of highest frequency for the lowest grade (third) in Carroll, Davies and Richman (1971). In each case, the authors assume that the words in their list will be of high frequency and high utility in the reading materials children will encounter. Instant recognition of such a core of sight words should be an aim for children completing the third grade.

"Quick" Word Lists for Reading Assessment

A variety of short word lists have appeared for assessment purposes. Published Informal Reading Inventories (Silvaroli, 1969; and McCracken, 1966) have included quick word list tests to precede the child's oral reading of the test passages. Other lists include Harris (1965) *Queens College List* and the *San Diego Quick Assessment* by LaPray and Ross (1969). There are, however, certain disadvantages in using such lists. Many short lists are based in part on Thorndike (1921, 1931), or Thorndike and Lorge (1944) and are, therefore, somewhat dated. In addition, and important for the purposes of Canadian teachers, none of the foregoing lists have been constructed from the specific Canadian instructional materials being used by Canadian children. This, of course, is to be expected, since the American lists were constructed for American youngsters.

Canadian "Quick" Word Lists

It was thought that "quick" word lists would be most useful for reading instruction in Canada if they were based on the following criteria:

- 1) the words were found in Canadian reading series
- 2) the words were contained in American basal series, as these are used extensively in Canadian Schools (Harris-Jacobson, 1972)
- 3) the words were of high frequency in adult writing (Kucera-Francis, 1967)

At the primary level, it was hoped that a single list could be formulated which would meet the above criteria, including occurrence in three Canadian reading series: Covell (1966) *The Ryerson Readers*; McInnes (1960) *Young Canada Reading Series*; and McIntosh (1962) *Canadian Developmental Reading Series*.

It was found that only at the pre-primer and grade three levels were there ten words common to all three reading series, although at each level

some words met all the criteria, as can be observed by examining the lists appended. Consequently, separate lists have been prepared at the primary level referring to each of these series. Each list contains words common to its basal series and to Harris-Jacobson (1972) and Kucera-Francis (1967).

The primary level lists are therefore criterion-referenced both to specific instructional material (basal reading series) and to more general canons of utility (Harris-Jacobson, 1972 and Kucera-Francis, 1967).

Beyond the primary grades, children's reading broadens to such an extent in and out of school that sight word knowledge is then less tied to a specific reading series that may be in use (Spache, 1973). Moreover, a variety of reading instructional materials other than basal series often becomes an important component of the reading programme in the intermediate grades. For these reasons, the word lists beyond the primary level were composed by selecting grade four, five and six words contained in Harris-Jacobson (1972) *Basic Elementary Vocabularies* having the highest frequency in adult writing according to Kucera-Francis (1967). For the convenience of teachers implementing an individualized programme wherein there is lessened emphasis on basals, a fourth list is provided. This meets the same criteria as the individual series-referenced lists, with the exception that in cases where there is an insufficient number of words common across three series, words found in one or more series were chosen that were located on the Harris-Jacobson (1972) list and were highest on Kucera-Francis (1972).

Uses for the Quick Word Lists

A short graded word list can be useful in an informal appraisal of word recognition skills. A list of unrelated words has the advantage over connected prose that the list does not permit the use of context in recognizing words. This enables us to make a more accurate estimate of the child's ability to recognize each individual word instantly at sight.

Harris (1965) suggests that it is sometimes preferable "to check on the degree to which the new words in the book are known rather than the total vocabulary". For this reason the proposed series-specific lists seem relevant. Since the words also meet the criterion that they are to be found on the most recent and comprehensive lists (Harris-Jacobson, 1972; Kucera-Francis, 1967), a general and grade level estimate of sight word knowledge can also be obtained. Such reading level estimates may be of assistance in selecting appropriate instructional materials, where data from more extensive evaluation are not available. A reading level estimate from a quick word list also provides an appropriate entry point into the oral reading of the passages on an informal inventory.

Administration

A structured and accurate presentation procedure can be followed by showing each word by means of a small flash card. In this way exposure can be kept short and one can control which word the youngster is looking at. For uniform and accurate timing a tachistoscope is recommended. Inexpensive hand-held spring-operated tachistoscopes can be obtained

from a variety of sources. They seem to give a more consistent performance than homemade tachistoscopes described by Harris (1965) and Durrell (1954).

The student is told to look carefully and to be ready to say the word when he sees it flashed. This direction may be repeated for the first few words.

When the student says the word flashed, the response can be considered correct and scored +; a "don't know" response can be indicated by a - . The nature of incorrect responses may be indicated by phonetic spelling of the errors, the teacher writing the error words according to the way the student pronounces them.

It is usually suggested that the child be started in the lists two grades below his grade placement, to be fairly sure of starting at a level where he has mastery. Where one believes the child to have problems in reading, starting at preprimer is advised. In testing, the child reads from lower to higher lists until he makes three errors on one list.

The highest level at which the student has less than three errors can be considered a rough approximation to his instructional level. This criterion has been suggested by LaPray and Ross (1969). It would seem to be in line with recent word error criteria for oral reading of informal inventory passages suggested by Dunkeld (1971). The criterion for correct responses (80%) for word lists is lower than that for reading passages (85%-93%). This is because the reader has less information available in reading word lists—there are no pictures or other graphic aids, and the words are not in context as in an array of continuous prose.

After instant word recognition has been tested, it is often profitable to return to the first word where an error occurred and then move up grade by grade, on each word that was missed or mistaken by the student. The purpose here is to observe the methods and skills used by the student in attacking words that he probably does not know at sight. The word card is placed in front of him, rather than being flashed, and the student is encouraged to work out the pronunciation of the word.

Harris (1965) suggests: "If the child does not recognize a word immediately, one should encourage him to do his thinking out loud as he tries to figure it out. A child staring blankly at a page does not reveal very much, but if he verbalized his thoughts, one can find out what he is trying to do and why he succeeds or fails".

Incorrect responses can be written, as before, in phonetic spelling. The teacher may also wish to record data concerning aspects of the child's word attack process—whether there is some kind of systematic attack from word beginning toward the end, or whether the attack is random. While the word lists are not intended as a comprehensive test of phonics knowledge, specific skill needs in recognizing the sounds of specific letters and specific letter combinations in words can be observed.

Summary

Use of the quick word list can provide a rough estimate of reading level as well as an informal assessment of sight word knowledge and word attack skills. The *Canadian Quick Word Lists* would appear to be more

valid for the purposes of Canadian teachers than older lists, since they are based on specific Canadian readers as well as on the most recent and comprehensive lists which cover American basals and content series (Harris-Jacobson, 1972) and adult literature (Kucera-Francis, 1967).

References

- Carroll, J. B., Davies, P., & Richman, B. *The American heritage word frequency book*. Boston: Houghton Mifflin, 1971.
- Covell, H. M. (Ed.). *The Ryerson readers*. Toronto: Ryerson Press, 1966.
- Dolch, E. W. A basic sight vocabulary. *Elementary School Journal*, 1936, 36, 456-460.
- Dunkeld, C. *The validation of the informal reading inventory for the designation of instructional reading levels: A study of the relationships between children's gains in reading achievement and the difficulty of instructional materials*. Unpublished doctoral dissertation, University of Illinois, 1970.
- Durrell, D. D. *Improving reading instruction*. New York: Harcourt Brace Jovanovich, 1955.
- Fry, E. Teaching a basic reading vocabulary. *Elementary English*, 1960, 39, 38-42.
- Harris, A. J. *How to increase reading ability*. New York: McKay, 1965, 198.
- Harris, A. J. & Jacobson, M. D. *Basic elementary reading vocabularies*. New York: The MacMillan Company, 1972.
- Johnson, D. The Dolch list re-examined. *The Reading Teacher*, 1971, 24, 449-454.
- Kucera, H. & Francis, N. W. *Computational analysis of present-day American English*. Providence, R.I.: Brown University Press, 1967.
- LaPray, Margaret & Ross, R. The graded word list: Quick gauge of reading ability. *Journal of Reading*, 1969, 306-307.
- McCracken, R. *Standard reading inventory*. Klamath Falls, Oregon: Klamath Printing Company, 1966.
- McInnes, J. A. (Ed.) *Young Canada reading series*. Don Mills, Ontario: Thomas Nelson, 1960.
- McIntosh, J. R. (Ed.). *Canadian developmental reading series*. Toronto: Copp-Clark, 1962.
- Otto, W. & Chester, R. Sight words for beginning readers. *Journal of Educational Research*, 1972, 65, 435-443.
- Silvaroli, N. J. *Classroom reading inventory*. Dubuque, Iowa: Wm. C. Brown Company, 1969.
- Spache, G. D. & Spache, Evelyn B. *Reading in the elementary school*. Boston: Allyn and Bacon, 1973, 173.
- Thorndike, E. L. *The teacher's word book*. New York: Bureau of Publications, Teachers College, Columbia University, 1921.
- Thorndike, E. L. *A teacher's word book of the twenty thousand words found most frequently in general reading for children and young people*. Bureau of Publications, Teachers College, Columbia University, 1931.
- Thorndike, E. L. & Lorge, I. *The teacher's word book of 30,000 words*. New York: Teachers College Press, Columbia University, 1944.

APPENDIX: Canadian Quick Word Lists

A. Quick Word List Referenced on *Ryerson Readers*, Kucera-Francis (1967), and Harris-Jacobson (1972)

<i>PP</i>	<i>P</i>	<i>Grade 1</i>	<i>Grade 2</i>
I	all	why	small
with	they	along	use
come	put	could	because
me	take	by	always
down	of	head	people
little	away	first	place
is	good	over	enough
here	from	right	better
look	she	would	knew
can	went	think	thought
<i>Grade 3</i>	<i>Grade 4</i>	<i>Grade 5</i>	<i>Grade 6</i>
wild	temperature	popular	atomic
direction	being	recent	income
moment	future	broad	somewhat
important	entire	argument	opportunity
notice	original	mission	phase
question	however	faith	technical
offer	government	community	billion
attack	remain	knowledge	announced
month	statement	operation	despite
narrow	throughout	education	possibility

B. Quick Word List Referenced on Nelson *Young Canada Reading Series*, Kucera-Francis (1967) and Harris-Jacobson (1972)

<i>PP</i>	<i>P</i>	<i>Grade 1</i>	<i>Grade 2</i>
I	all	why	small
with	they	along	use
come	but	could	because
me	take	think	always
down	of	by	people
little	now	how	place
is	good	first	enough
here	him	over	between
look	she	would	knew
can	went	then	thought

Grades 3-6 (as in List A)

C. Quick Word List Referenced on Copp-Clark *Canadian Developmental Reading Series*, Kucera-Francis (1967) and Harris-Jacobson (1972).

<i>PP</i>	<i>P</i>	<i>Grade 1</i>	<i>Grade 2</i>
I	around	along	small
with	they	why	used
come	but	could	while
me	take	by	always
down	of	head	people
little	now	more	great
is	his	other	enough
here	from	right	better
look	she	would	knew
can	went	then	thought

Grades 3-6 (as in List A)

D. Quick Word List for Use with Individualized Reading Programmes

<i>PP</i>	<i>P</i>	<i>Grade 1</i>	<i>Grade 2</i>
I	all	why	small
with	they	along	use
come	but	could	because
me	take	by	always
down	of	how	people
little	now	more	great
is	his	other	enough
here	from	first	better
look	she	would	knew
can	went	then	thought

Grades 3-6 (as in List A)

R. BÉDARD

Marguerite D'Youville College

Partly Tailored Examinations

A type of examination in which additional questions are provided was used for Grade 12 Algebra and College I Introductory Calculus. An hypothesis was formulated that this procedure should reveal additional knowledge which would be reflected in superior average scores for the class group. Differences between mean scores as between students being examined by the new method and a control group demonstrated that this type of exam offered the opportunity to students in Grade 12 Algebra to score higher marks based on their actual knowledge. Further analysis and development of the procedure could make this type of exam usable in College Calculus achievement measurement. (Mr. Bédard is Professor at Marguerite d'Youville College, Quebec.)

Introduction

The partly tailored exam reported here was an attempt to provide a technical innovation capable of producing better measurement.

The standard procedure is to give the same exam to all students of a course. The type of exam commonly used is thought to fall into the category of a power test: that is, all students should have the time to answer all the items or, at least, try them all before the examination time is over (Guilford, 1954). It is too often forgotten however, that at the other extreme there is another type of exam—the speeded tests. These are constructed so that there is not sufficient time for examinees even to attempt to answer all items. Most intelligence tests are of this nature. In fact examinations actually used in the classroom usually fall in between these two extremes. The same exam, for an able student, may clearly be a power test, but for a weaker one may be closer to a speeded test. The marking being assessed on the basis of all questions, the teacher is not measuring both students with the same yardstick. For this weakness there is a rapid and easy corrective—the partly tailored test proposed in this paper.

Recent developments in educational technology, particularly the use of the computer, have generated a new kind of testing: tailored or branching testing. "In this testing procedure, the item to which an examinee is to

respond next is determined by his responses on the preceding item" (Glaser and Nitko, 1971, p. 651). Formerly a well entrenched belief was that all students should be subjected to the same items to ensure a good and honest examination. With the new computer facility, it is reasonable to abandon this procedure and start on a more flexible path. For the purpose of classroom testing it is logical to assume that an exam which allows that the number of items answered by examinees may vary from one to the other is still fair to all, provided the *opportunity* given during the exam is the same for all students.

The partly tailored exam proposed here aims at three goals: (1) to try to provide an exam in the category of power tests for all examinees, (2) to allow the examinee to adjust the examination to his individual differences, (3) to keep the testing duties of the teachers at a minimum. While the partly tailored exam follows the approach basic to traditional exams, internally it is split in two parts; one consists of all the items the teacher wishes his students to answer compulsorily, the other consists of items left to their choice. Based on the teacher's judgment, the examination provides the average student sufficient time to answer all questions. Students answer all the compulsory items and are marked on all of them, but are free to answer any or none of the extra items in the second part. They are marked only on those items they choose to answer. The maximum marks a student can get is determined by the number of questions he answers. His score is the ratio of the marks he would have obtained had he answered correctly all the compulsory questions plus the "free" ones he chose to answer. For a detailed description of the procedures refer to Bédard (1972).

The subject is a Grade 12 Algebra course and a College I Introductory Calculus course. The exams used were part of the regular assignments. Two examinations at each level were given, designed to test certain working hypotheses. The experiment is divided into three phases according to these hypotheses and the levels of the courses.

Phase 1

A. Logical Background

In practice, teachers often force students to remain in the classroom during the whole exam period, or for a substantial part of it. This is intended to discourage students from responding hastily in order to go out as soon as possible. Whether this end actually is accomplished or not is the first question to come to mind. This common belief seems to be shared by higher authorities in education, since students entering for the final exams in the province of Quebec, are obliged to spend at least an hour on each exam; they cannot leave the room before this hour is over. This procedure leads us to formulate the following hypothesis: (1) the mean of a group of students forced to stay in the classroom for the whole exam period will be significantly superior to the mean of students who are free to leave when finished.

The basic assumption in favour of an exam which provides extra questions, is that in choosing freely, students should do better because they would try only those questions to which they believe they know the

correct answers. But, because judgment is a mental faculty which needs to be exercised within a particular setting, it seemed desirable to verify that these expectations are, in fact, justified.

Of course, if we were to combine the order to remain in classroom with the provision of additional free questions, then the results should be much better. That is the logic on which the next two hypotheses rely: (2) the mean of a group forced to stay and provided with additional questions will be significantly superior to the mean of a group only forced to stay, and (3) the mean of a group forced to stay and provided with additional questions will be significantly superior to the mean of a group free to leave.

One assumption which could be formulated is that the results of students on the free questions only should be near perfect. So, if one marks their papers on the compulsory questions only and then marks them on all questions answered, it seems reasonable to assume that the scores on the latter would be higher than on the former. But is it true? Glaser and Nitko cite evidence which attests to the fact that in such instances high average students better their scores but low average students have a tendency to lower their final scores. The direction of the outcome being unknown, an open-ended hypothesis was preferred: (4) the mean of final scores of a group with free questions will be significantly different from its mean calculated over the marks on the compulsory questions only.

B. Method

A mid-term two-hour exam was prepared with twelve compulsory questions and twelve additional questions which students were free to answer or not. This exam tested 37 girls in parts of the grade 12 algebra content. The subjects were separated randomly into three groups. In the control group (CG), students would receive the compulsory questions only and were free to leave when finished. In a second group (GE1), students wrote the same exam but were compelled to stay in the classroom during the whole period. A third group (GE2) received both compulsory and additional questions and was forced to stay. The experimental conditions were allotted randomly to the groups.

C. Results

Tables 1, 2, and 3 show means, standard deviations and details of analyses of variance. The GE2 mean on compulsory questions only was 21.13 (marked out of 50).

D. Interpretation

Although the mean (31.208) of the group forced to stay was high compared to the means of the other two groups, the analysis of variance does not permit us to sustain our first hypothesis. The differences are not significant. The next two hypotheses must also be rejected. Particularly, we cannot maintain the idea that giving additional questions to choose from greatly changes the students' results. But the fourth hypothesis is supported by our results: the students profited from the fact that they could freely answer certain additional questions.

TABLE 1
MEANS AND STANDARDS DEVIATIONS OF THE FINAL SCORES

	CG	GE1	GE2
Means	23.4	31.2	24.0
Standard Deviations	10.9	10.1	9.3
N	12	12	13

TABLE 2
ANALYSIS OF VARIANCE OF SCORES OF THREE GROUPS

	SS	DF	MS	F
Between groups	455.3250	2	227.6625	2.2126*
Within groups	3498.3767	34	102.8934	
TOTAL	3953.7017	36		

* Not significant

TABLE 3
ANALYSIS OF VARIANCE OF FINAL SCORES OF GE2 VERSUS SCORES
OVER 12 COMPULSORY QUESTIONS

Source	SS	DF	MS	F
Columns	55.247	1	55.247	11.5723*
Rows	2048.032	12	170.669	

* Significant at $p < .01$

Some further discussion of the results of this experiment is appropriate. In spite of the fact that randomization was affected by the use of a random numbers table, the students in the group with the mean of 31.2 had higher marks on previous exams. This might explain the difference observed in their favour. Nevertheless the differences were not statistically significant. Still, the confirmation of the last hypothesis suggests the necessity to carry the investigation further. The method of comparing the group with itself seems to yield more sensitive results.

Phase 2

A. Logical Background

In the preceding experiment, the first two groups answered only the compulsory questions while the last group had twelve more questions. The

following question may be raised: if the other two groups had had these twelve additional questions as compulsory questions, what would have been their performance? Because of the limited number of subjects available this question was not answered within the first experimental design. The experiment now to be described is an attempt to answer it.

The following assumption serves as a logical basis for the first hypothesis. The majority of students answering an exam with compulsory questions only would score lower marks than they would obtain on the same exam with a certain number of questions compulsory and the others free. So the first hypothesis is to the effect that the mean of final scores for the group with free questions will be significantly different from the mean of final scores of the group with all the questions compulsory.

Those examinees with free questions benefit from more time to answer each question compared to the subjects in the other group. Assuming that time is a factor in almost all exams, its effect should be observable in the scores. If the scores on the common compulsory questions are calculated, the students in the group with freedom to answer extra questions should perform better. That reasoning leads us to the second hypothesis: on the common compulsory questions, the mean of the group with fewer compulsory questions will be significantly superior to the mean of the group with all the questions compulsory.

Since one group has all questions compulsory, two sets of scores can be calculated: first, the scores on the common compulsory questions and, second, the final scores on all of them. On the other hand, one may think that the questions which are compulsory in both exams are sufficient to obtain a fair indication of the students' knowledge. If so, the group answering all questions is asked to do more exam work than is necessary. Are they to be penalized in terms of lower final scores due to this fact? The third hypothesis inquires into this aspect of measurement: the mean of the scores on the common compulsory questions will be significantly higher than the mean of the final scores of the group having all questions compulsory.

Again, we may replicate the analysis of scores for the students who are provided with free questions. Can we confirm the fact that giving free questions is significantly helping the examinees? So the fourth hypothesis is: for the group with free questions, the mean of final scores will be significantly higher than the mean of the scores on the compulsory questions of the group with free questions.

B. Method

Thirty-five girls sat for an exam covering another part of the algebra course content. The class was divided randomly into two groups. The experimental group (EG) exam was scheduled for two hours and consisted of twenty-five compulsory and ten free questions. The control group (CG) had the same exam with all the questions compulsory. In both groups, the girls could not leave before an hour and a half had passed. Each paper, after marking, bore two scores; one calculated for the first twenty-five questions, the other, covering all the questions answered.

C. Results

For the control group, the mean of the final scores was 45.12 and the mean of the scores for the first twenty-five questions was 48.76. For the experimental group, the mean of the final scores was 52.89 and the mean of the scores over the first twenty-five questions was 51.61. (These scores were calculated out of a maximum of 70, not 100.) Four analyses of variance were conducted, one for each hypothesis.

TABLE 4
ANALYSIS OF VARIANCE OF FINAL SCORES

	SS	DF	MS	F
Between groups	527.9973	1	527.9973	3.5708*
Within groups	4879.5352	33	147.8647	
TOTAL	5407.5313	34		

* Significant at $p < .01$

TABLE 5
ANALYSIS OF VARIANCE OF SCORES ON FIRST 25 COMMON
COMPULSORY QUESTIONS OF BOTH GROUPS

	SS	DF	MS	F
Between groups	70.8350	1	70.8350	0.3632*
Within groups	6435.3203	33	195.0097	
TOTAL	6506.1523	34		

* Not significant

TABLE 6
ANALYSIS OF VARIANCE OF FINAL SCORES OF CG VERSUS SCORES
OVER FIRST 25 QUESTIONS

Source	SS	DF	MS	F
Columns	113.059	1	113.059	27.8551*
Rows	3371.882	16	210.743	

* Significant at $p < .01$

D. Interpretation

The first hypothesis was confirmed. This shows that the free questions help students not because these were easier and were available only to one group, but because of the proper selection of the questions to be answered

TABLE 7
ANALYSIS OF VARIANCE OF FINAL SCORES OF EG VERSUS SCORES
OVER FIRST 25 QUESTIONS

Source	SS	DF	MS	F
Columns	14.694	1	14.694	2.2959*
Rows	7769.250	17	457.015	

* Significant at $p < 0.25$

freely. This finding supports the idea that adding free questions helps students get better scores at an exam.

The rejection of the second hypothesis probably indicates that the group with 35 compulsory questions had sufficient time to complete the exam. In fact, all the girls were out of the classroom before the end of the two-hour period. This observation and the rejection of the second hypothesis leads to the belief that time was not an important factor in this phase of the experiment.

If time is not an important factor, the confirmation of the third hypothesis raises one question. Which factor accounts for the fact that the final scores were significantly lower than the scores over the first 25 questions? Two answers are suggested: the last ten questions were more difficult than the first 25, or fatigue played a part. The number of free questions chosen by EG students, and the marks they made on them, were both low. This tends to support the idea that the questions were more difficult than the compulsory questions. Fatigue within a two-hour exam seems, from experience, to constitute a factor of less importance.

In view of the reasoning and facts set out in the preceding two paragraphs, the acceptance of the hypothesis at a relatively low level of significance ($p < .05$) could be reasonable. If we observe that CG students lowered their scores significantly by answering the last ten questions, it is logical to believe that they were rather difficult compared to the first 25 questions. Add to this the fact that only 10 out of 35 questions were available on a free-choice basis, counting for only 20 of 70 marks. Finally, considering that this is action research aimed at providing guidelines for measurement improvement, it was preferred to retain the hypothesis only provisionally, subject to the findings of later experimentation. At any rate, in spite of the difficulty of the last ten questions, some improvement in the marks of this group was observed.

Phase 3

A. Logical Background

The main purpose of this part of experiment was to apply the partly tailored exam to evaluation of performance within a College Calculus course. These exams usually contain a smaller number of questions which take longer to answer and are worth more marks each.

The interest remains the same: to improve mean scores by the addition

of free questions. If free questions are provided will examinees improve their average marks? The results of the phase 1 experiment being the only empirical background available, the following hypothesis was formulated: the mean of the final scores will be significantly superior to the mean of the scores on the compulsory questions.

B. Method

A class of 15 girls sat for two different exams: a mid-term and a final. The first exam lasted two hours and consisted of four compulsory questions and four free questions. The second one was scheduled for two and one-half hours, and consisted of five compulsory questions and four free questions. In each case, two different scores were calculated and converted to a common maximum. Afterwards, a repeated measures analysis of variance was carried out on each examination.

C. Results

On the first exam, the mean of the final scores was 50.40 and the mean for the first four compulsory questions was 50.33. The F ratio was not significant. On the second exam, the mean of the final scores was 56.67 and the mean on the first five questions was 54.53. The F ratio was 8.87, significant at $p < .01$ level of significance.

D. Interpretation

Certain possible explanations are available for these different results. Although the details of each kind of exam were explained on the front sheet of the exam paper, students were surprised at the unusual offer made in the experimental examination. From their comments afterwards they feared a trap and were puzzled as to how the marking could be done. From later complaints made by the students, the content of the course covered by the first exam seemed to have been improperly assimilated, and might have needed further explanations. These factors may account for the failure to get significant results from the first exam.

The results suggest that care is necessary in using this type of exam without prior explanation. The length of the answers required should be limited so that the number of marks assigned to each question is not too high. A fair number of questions should be included in the exam, with at least 25% of them as optional choices.

Conclusions

The results of this experiment tend to support the idea that students benefited from the attempt to tailor the exam to individual requirements. This was particularly evident with the Grade 12 Algebra exams with many short-answer questions—they need not be objective type questions. More careful attention should be paid to the preparation of exams in College Calculus which have longer-answer questions.

The type of examination studied offers possibilities for increasing the class average, for making better use of the time scheduled for examinations and for improving classroom measurement. The fact that we have been talking in very specific mathematics context should not prevent

teachers of other subjects from adopting it into their measurement procedures. The results obtained should encourage further experimentation.

References

- Bédard, R. Individualisation de la mesure scolaire. *Action pédagogique*, 1972, 23, 47-54.
- Glaser, R. and Nitko, A. T. Measurement in learning and instruction, in R. L. Thorndike (ed.), *Educational measurement*, 625-670. Washington, D.C.: American Council on Education, 1971.
- Guilford, T. P. *Psychometric methods*, 2nd ed., McGraw-Hill, 1954.

E. A. HOLDAWAY

University of Alberta

and

J. A. BENTHAM

Department of Education, P.E.I.

The Provision of Substitute Teachers

Although substitute teachers are employed in most school systems to cover the absence of regular teachers, the organization of this service has not received much attention.

The reported study examined the opinions of samples of principals, teachers and substitute teachers in Edmonton on the relative merits of (1) on-call substitution and (2) internal substitution. Principals and teachers generally perceived that internal substitutes performed more satisfactorily than did the on-call substitutes, but this view was not supported by the on-call substitutes. However, internal substitution was seen to be more difficult to organize.

Various combinations of types of substitution for various grade levels are recommended for consideration. (Dr. Holdaway is Associate Professor in the Department of Educational Administration, The University of Alberta; Mr. Bentham is Consultant in the Summerside office of the Department of Education, P.E.I.)

The provision of substitute teachers to cover the absences of regular teaching personnel has become standard practice in North America. How satisfactory this service is depends upon many factors, of which the two most critical are (1) the substitute staff who provide the service, and (2) the organization and administration of the service.

Substitute teaching represents a sizeable portion of total teaching activity, but all too frequently it is considered as a continuous series of emergencies or "necessary evils". Problems related to substitute teaching cannot be easily solved. Research in this area has advanced several solutions, but the best of these solutions can only be considered useful in the context of the school system which is considering their adoption.

Two main types of substitute teachers are mentioned in the literature. The term "on-call substitute" refers to a teacher, not permanently

employed, who substitutes for regular teachers. "Internal substitute" refers to a permanently employed teacher who substitutes for another teacher on the same staff.

Research Project

This article is based primarily on a study (Bentham, 1970) which investigated the effectiveness of the *on-call* and *internal* methods of substitution as perceived by 77 principals, 1,406 classroom teachers, and 237 on-call substitute teachers in the two Edmonton school districts.

The Demand for Substitute Teachers

Kozeluk (1970, p. 30) has stated that the four large city school districts in Alberta required substitute teachers in the 1968-69 school year for a total of 58,809 teaching days, that is, an average of 5.1 days per classroom teacher. In the Edmonton study, on-call substitute teachers said that they taught for an average of 13.7 different classroom teachers in the period September to December inclusive, 1970. The majority of substitute teacher assignments were short-term. On-call substitute teachers had taught for an average of 22.4 days during this period, and 47.6 per cent of the sample had taught for more than twenty days.

Data supplied by the 1,406 classroom teachers showed that 39 per cent of this sample provided internal substitution for another staff member in this period September to December inclusive, 1970. This group substituted for an average of 4.7 different teachers, and 72 per cent indicated that they provided substitution for less than five hours each month.

Characteristics of On-Call Substitute Teachers

Female teachers represented four-fifths of the on-call substitute teacher sample in this study. The mean age of on-call substitute teachers was 38 years, with one-quarter of the sample being under 25 years. When comparing the urban (Bentham) and provincial (Kozeluk) on-call substitute teacher samples, a greater percentage of the urban on-call substitutes held a university degree and had a professional teaching certificate. However, the urban on-call substitute teachers tended to have less teaching experience, both as regular teachers and as on-call substitutes.

Analysis of Teaching Functions

To assist in evaluating the perceived effectiveness of on-call and internal substitution, a list of fifteen teaching functions was developed. Principals and classroom teachers were asked to indicate on a four-point scale (1 low — 4 high) the degree to which they perceived that (1) internal substitutes and (2) on-call substitutes performed these functions. On-call substitutes were also asked to indicate the extent to which they performed the same functions. The mean response scores for all groups are shown in Table 1.

The statistical significance of differences between the means was assessed by using (1) *t* tests ($p \leq 0.05$) when two mean responses were compared, and (2) Scheffé analysis of variance tests ($p \leq 0.10$) when three mean responses were compared.

Differences with respect to internal substitutes. Principals perceived

TABLE 1
MEAN EXTENT* TO WHICH PRINCIPALS, TEACHERS, AND ON-CALL
SUBSTITUTES PERCEIVED THAT INTERNAL SUBSTITUTES AND
ON-CALL SUBSTITUTES PERFORMED FUNCTIONS

Functions	Internal Substitutes	
	(a) Principals	(b) Teachers
Range of N=	49-54	582-705
1. Review previous lesson content.	2.55 ^a	1.84
2. Teach new content.	2.77 ^a	2.01
3. Teach lesson planned by regular teacher.	3.17 ^a	2.58
4. Use variety of instructional methods.	2.84 ^a	2.22
5. Allow students time to do own work in class.	2.53	3.20 ^a
6. Provide discipline necessary for student learning.	3.41 ^a	3.19
7. Allow students to work either individually or in groups.	2.96	3.01
8. Use audio-visual aids such as T.V., films.	3.00 ^a	2.34
9. Become aware of physical disabilities of students.	2.91 ^a	2.21
10. Become aware of mental and emo- tional disabilities of students	2.89 ^a	2.15
11. Ask other teachers for information about students.	2.94 ^a	2.38
12. Use cumulative record cards to obtain information.	2.33 ^a	1.87
13. Report progress to regular teacher upon his/her return.	3.30 ^a	2.78
14. Become involved in special events.	-	-
15. Participate in staff meetings.	-	-

* Measured on questionnaires using scale: 1 (small extent) -- 4 (large extent)

that internal substitutes performed eleven of the thirteen compared functions to a significantly greater extent than teachers perceived internal substitutes as performing these functions [columns (a) and (b)]. The functions most closely associated with the instructional process and which showed statistically significant differences ($p \leq 0.01$) between these two groups were: "Review lesson content", "Teach new content", "Teach lesson planned by regular teacher", and "Use variety of instructional methods".

TABLE 1 (Cont'd)

(c) Principals	On-Call Substitutes	
	(d) Teachers	(e) On-Call Substitutes
64-71	729-944	204-233
1.91 ^c	1.65 ^d	2.57 ^b
2.32 ^c	1.91 ^d	2.38 ^c
2.97 ^c	2.57 ^d	3.51 ^b
2.11 ^c	1.83 ^d	2.88 ^b
2.79	3.11 ^b	2.89
2.56	2.53	3.48 ^b
2.51	2.64	3.11 ^b
2.00	1.95	2.69 ^b
1.57	1.57	2.71 ^b
1.60	1.53	2.59 ^b
1.99	1.80	2.30 ^b
1.19	1.29	1.66 ^b
2.17	2.14	3.12 ^b
1.30	1.21	1.87 ^b
1.31	1.37	1.64 ^b

^a Significantly higher ($p \leq 0.05$) than the other mean score for internal substitutes.

^b Significantly higher ($p \leq 0.05$) than either other mean score for on-call substitutes.

^c Significantly higher ($p \leq 0.05$) than the other mean score marked ^d.

Differences with respect to on-call substitutes. On-call substitute teachers perceived themselves as performing thirteen of the fifteen compared functions to a significantly greater extent than did both of the principal and classroom teacher groups [column (e) compared with columns (c) and (d)]. Only for the function "Allow students time to do own work in class" did the teachers score the on-call substitutes significantly ($p \leq 0.01$) higher than did both the principals and on-call substitutes. Both the principals and on-call substitutes perceived the on-call

TABLE 2
FIVE HIGHEST RANKED MEAN DIFFICULTY SCORES* OF POSSIBLE
PROBLEM AREAS FOR INTERNAL AND ON-CALL SUBSTITUTION

Rank	Problem Areas of Internal Substitution			
	Perceived by Classroom Teachers	Mean Score	Perceived by Principals	Mean Score
1	Short notice	2.58	Short notice	2.86
2	Not familiar with progress of class	2.58	Teachers have to forego preparation periods	2.79
3	Have to forego preparation periods	2.52	Teacher required to substitute outside own subject area	2.32
4	Required to substitute out- side own subject area	2.35	Staff morale	2.14
5	Lack of lesson plans	2.31	Attitude of students when regular teacher absent	2.10

*Measured by Teacher, Principal, and On-Call Substitute Questionnaires

substitutes as performing “Teach new content” to a significantly ($p \leq 0.01$) greater extent than was perceived by the teachers. On all of the first five listed functions, the principals scored the on-call substitutes significantly ($p \leq 0.02$) higher than did the teachers.

Comparison of internal and on-call substitutes. The principals perceived that classroom teachers who acted as internal substitutes performed all functions except “Teach lessons planned by regular teacher” and “Allow students time to do own work in class” to a significantly ($p \leq 0.01$) greater extent than did on-call substitutes [columns (a) and (e)]. Similar results were obtained when the perceptions of classroom teachers about the performance of functions by the two types of substitutes were compared.

Problem Areas in Substitute Teaching

The same problem areas connected with substitute teaching recur in many studies, such as those by Connors (1927), Lambert (1955), Forcina (1958), Polos (1963), and Kozeluk (1970). Kozeluk and Holdaway (1971) provided a comprehensive list of variables causing dissatisfaction to regular teachers and on-call substitute teachers. These were similar to the following as listed by Lambert in his substitute teacher study conducted in urban centers of the United States: (1) lack of adequate lesson plan; (2) shortness of notice; (3) lack of information on students; (4) failure to acquaint substitutes with special rules, schedules and routines in particular schools; and (5) student behavior. In the present study these problems were perceived by on-call substitute teachers as presenting

TABLE 2 (Cont'd)

Problem Areas of On-Call Substitution					
Perceived by Classroom Teachers	Mean Score	Perceived by Principals	Mean Score	Perceived by On-Call Substitutes	Mean Score
No written report of work completed	2.04	Evaluation of on- call substitute teacher performance	2.55	Lack of opportuni- ty to evaluate own performance	2.28
Same substitute not retained if teacher absent several days	2.04	Student discipline	2.26	Lack of lesson plans	2.26
Lesson plan not followed	1.82	Substitutes do not report matters of concern	2.25	Attitude of stu- dents when regular teacher is absent	2.16
Extra duties of reg- ular teacher not as- sumed by substitute	1.74	Extra duties of regular teacher not assumed by substitute	2.18	Substitute teacher not contacted by regular teacher if regular teacher absent several days	2.06
Regular teacher not contacted by substi- tute if regular teach- er absent several days	1.73	Substitute teacher arriving late	2.04	Not encouraged to feel part of teaching team	2.03

(1 = Little Difficulty, 4 = Considerable Difficulty).

some difficulty.

Principals and classroom teachers were asked to indicate on a four-point scale (1 little—4 considerable) the degree of difficulty they associated with possible program areas in (1) internal substitution and (2) on-call substitution. On-call substitute teachers were asked to indicate the degree of difficulty they associated with certain aspects of on-call substitution. The five highest ranked problem areas for both methods of substitution are presented in Table 2. The principal and classroom teacher groups indicated that internal substitution was generally a more difficult practice than was on-call substitution.

Opinions Concerning Substitute Teacher Services

Principals, teachers and on-call substitute teachers were asked to give their opinions on four questions concerning present and suggested substitute teacher services.

Studies completed in the United States by Lambert (1955), Forcina (1958) and Anderson (1959) recommended that positions of full-time substitute teachers be established with full teacher privileges. In this study, 73 per cent of the principals, 76 per cent of the classroom teachers, and 78 per cent of the on-call substitute teachers felt that this would be a desirable practice.

Opinions concerning the perceived effectiveness of various types of substitute teacher services at specific grade levels are presented in Table 3. The perceived effectiveness of both (1) "Complete internal substitution"

and (2) “Mostly internal, some on-call substitution” increased with increasing grade level for each group of respondents, except for the responses of on-call substitutes to “Mostly internal, some on-call substitution”. The perceived effectiveness of both “Complete on-call substitution” and “Mostly on-call, some internal substitution” decreased with increasing grade level for each group of respondents.

TABLE 3
PREFERENCES OF VARIOUS GROUPS FOR MOST EFFECTIVE TYPE
OF SUBSTITUTE TEACHER SERVICE

Grade Levels	Respondent	N	Complete Internal Substitution	Mostly Internal, Some On-Call Substitution	Mostly On-Call, Some Internal Substitution	Complete On-Call Substitution
			%	%	%	%
Elem-entary	Principals	49	19	19	17	46
	Classroom Teachers	502	13	11	26	50
	On-Call Substitutes	203	26	22	26	26
Junior High	Principals	16	44	36	8	12
	Classroom Teachers	232	20	24	22	33
	On-Call Substitutes	121	32	21	26	22
Senior High	Principals	17	47	42	5	5
	Classroom Teachers	622	35	35	15	15
	On-Call Substitutes	86	44	21	15	20

Total of percentages for each row is 100%.

In his report Forcina (1958) recommended that substitute teacher services could be made more effective if a body of permanent substitutes was assigned to work in a group of schools. Table 4 summarizes the opinions of all groups in this study concerning the desirability of this idea at various grade levels. The majority of each group of respondents at each grade level was in favour of this practice.

Forcina concluded that a major problem in substitute teacher service was the misassignment of substitute teachers. He felt that a substitute teacher should teach only in the subject area and grade level in which he had training. In this study, 68 per cent of the principals, 60 per cent of the classroom teachers, and 61 per cent of the on-call substitute teachers agreed that this would be a “preferable” situation. In addition, 24 per cent of the principals, 28 per cent of the classroom teachers, and 18 per cent of the on-call substitute teachers felt that the practice should be “essential” for substitute teachers.

TABLE 4

PREFERENCES OF GROUPS CONCERNING EMPLOYMENT OF PERMANENT
SUBSTITUTES IN A GROUP OF SCHOOLS

Grade Levels	Respondent	N	Very Unfavorable	Unfavorable	Favorable	Very Favorable
			%	%	%	%
Elementary	Principals	46	2	9	54	35
	Classroom Teachers	462	2	5	42	52
	On-Call Substitutes	183	2	6	44	49
Junior High	Principals	24	4	25	38	33
	Classroom Teachers	215	5	5	46	45
	On-Call Substitutes	108	4	7	36	53
Senior High	Principals	19	11	21	37	32
	Classroom Teachers	554	10	15	42	34
	On-Call Substitutes	77	5	5	38	52

Total of percentages for each row is 100%.

Summary

This article has focused upon teaching functions, problem areas and opinions associated with the on-call and internal methods of substitution. Principals and teachers perceived that internal substitute teachers generally performed the listed functions to a greater extent than did on-call substitute teachers. The on-call substitute teacher group perceived themselves performing the functions to a greater extent than was perceived by the principal and teacher groups. The instructional function, which is the stated purpose of providing substitution, was perceived by groups as being performed by both types of substitutes to a relatively small extent.

The problem areas associated with internal substitution were perceived by principals and teachers as presenting more difficulty than did the problem areas involved with on-call substitution. The on-call substitute teachers did not perceive the problem areas as presenting a considerable degree of difficulty.

In responding to present and suggested substitute teacher services, principals, teachers and on-call substitute teachers generally agreed that: (1) positions of full-time substitute teachers should be established with full teacher privileges; (2) a body of permanent substitute teachers should

be hired to work in a group of schools of the same grade level; and (3) teachers providing substitution should preferably be trained in the regular teacher's area of specialization. Principals and teachers perceived that on-call substitution was the most effective method of providing for an absent teacher at the elementary level. The perceptions of internal substitution as the most effective method increased with the grade level being taught.

Recommendations

The need for substitute teachers is increasing because school systems, concerned with improving their instructional program, are providing teachers with released time to work on non-instructional activities such as curriculum development, to participate in in-service programs, and to attend professional meetings. This increase in the amount and type of demand for substitution emphasizes the need for a combination of substitute services to provide the most effective coverage.

To be effective, internal substitution requires two administrative considerations. First, sufficient time must be allocated to selected teaching personnel to provide substitute teaching services. If teachers are required to use their preparation periods in which to substitute for other teachers, students may in effect be given a study period. Second, misassignment of internal substitute teachers should be avoided. Although internal substitution within the same subject area or grade level may not always be possible, when a teacher of English, for example, provides internal substitution in the sciences, the value may be questionable.

A great deal of criticism concerning substitute teaching has been directed at the inadequacies of the on-call substitutes themselves, and at the system under which they operate. Because a surplus of trained teachers now exists in many parts of Canada, we may be able to implement a suggestion made by the NEA in the early 1950's, and supported by the quoted studies, that school systems employ full-time, half-time, and quarter-time substitute teachers as a means of improving the quality of the substitute teacher service. The adoption of this service would not eliminate the need for temporary day-to-day substitutes, but it would greatly reduce the total workload carried by such teachers.

The hiring of *full-time* substitutes has many advantages, the most obvious of which are as follows:

- (1) The full-time substitute teachers could be selected as carefully as regular classroom teachers and, except for the fact that they would be moving from school to school, they would be treated as regular teachers.
- (2) The hiring of full-time substitute teachers also allows for a greater degree of selectivity in building an on-call substitute teacher staff. Many of the best substitute teachers were once classroom teachers, but for various reasons do not want to be employed full-time.
- (3) A full-time substitute teacher selection could include teachers trained in specialized areas such as industrial arts or home economics, which are difficult to cover through present on-call or internal substitution methods.

- (4) In larger systems, teacher services including full-time, half-time and on-call substitute teachers could be grouped to serve a particular area. This grouping might lead to better working relations among teachers providing the substitute teaching service and regular teachers.

The development of a comprehensive substitute teacher service depends upon the ability of staffing officers to project accurately the variety of substitute teacher needs and the associated costs. This information would allow determination of the most effective combination of the various types of substitute teacher services.

References

- Anderson, Kay. An analysis of the position of full-time substitute teachers in urban school systems of the United States. Unpublished Ed.D. thesis, University of Southern California, 1959.
- Bentham, J. A. A study of the effectiveness of on-call and internal teacher substitution. Unpublished M.Ed. thesis, University of Alberta, 1972.
- Conners, H. The substitute teacher service in the public schools. Unpublished Ed.D. thesis, Ohio State University, 1927.
- Forcina, J. Substitute teacher service in Trenton. Unpublished Ed.D. thesis, Teachers' College, Columbia University, 1958.
- Kozeluk, A. The status of substitute teachers in Alberta. Unpublished M.Ed. thesis, University of Alberta, 1970.
- Kozeluk, A. & Holdaway, E. A. The plight of the substitute teacher. *Alberta Teachers' Association Magazine*, April, 1971, 12-15.
- Lambert, S. Status and working relationships of substitute teachers in urban school systems. Unpublished Ed.D. thesis, George Washington University, 1955.
- Polos, N. Problems of the pinch hitter. *The Clearing House*, March, 1963, 293-296.

R. G. MOGULL

California State University at Sacramento

and

W. ROSENGARTEN, JR.

Roslyn Public Schools, Long Island

Predicting Success in Elementary Algebra

The purpose of this study was to develop a device for predicting student success in a high school Elementary Algebra course. It was intended to assist guidance counselors in advising students in selecting the most appropriate mathematics course. The study also describes a method by which the predictive efficiency of various test results can be evaluated.

Correlations were computed between the independent variables of Eighth Grade Mathematics final averages, results of the Iowa Algebra Aptitude Tests, and the verbal reasoning, numerical ability, and abstract reasoning subtests of the Differential Aptitude Tests, and with the dependent variable of final examination scores in ninth grade Elementary Algebra.

The results of this study show that the highest single correlation with the dependent variable was the Eighth Grade Mathematics final average with a correlation coefficient of approximately .70. The correlation coefficients were sufficiently high to permit the construction of an expectancy table useful for the prediction of degree of success in Elementary Algebra. (Dr. Mogull is Assistant Professor in the School of Business at California State University at Sacramento; Dr. Rosengarten is Director of Personnel Services in Roslyn Public Schools, Long Island, New York.)

Introduction

In counselling eighth grade students who are about to enter high school, guidance counselors and teachers might find useful a valid method of predicting student success in Elementary Algebra. Students themselves would be interested in their chances of success in an algebra course. Given that some students will already have decided to take Elementary Algebra, there is the need to section them properly within the course. By helping the student to select the mathematics course most appropriate in relation to his abilities, the counselor will help to reduce student frustration arising from unrealistic goals.

In addition, school guidance staffs might consider evaluating their present aptitude testing program with the objective of eliminating less valid or unnecessary predictors. The elimination of superfluous testing devices has the benefit of reducing educational expenses. Hence, this article presents a method of predicting success in Elementary Algebra to assist counselors in advising students and in evaluating their own testing programs.

Procedures

The locale chosen was a comprehensive four-year coeducational high school with a student population of roughly 1500. The school is located in the suburban New York State community of Roslyn, Long Island. It is assumed that the results and the conclusions from this study are also valid in other educational settings. This assumption can only be tested by a comparison with similar studies in other communities.

The independent variables included 8th Grade Mathematics final averages, results of the *Iowa Algebra Aptitude Test*, and the verbal reasoning, numerical ability, and abstract reasoning subtests of the *Differential Aptitude Test*. The dependent variable was the final examination score in ninth grade Elementary Algebra. A total sample of 132 male and female students was involved in determining which single independent variable was the most reliable and valid predictive device.

The compiled data were treated in the following manner:

- (1) correlations were computed between 9th grade final Elementary Algebra examination grades and each of the independent variables;
- (2) regression equations for each sex were calculated to determine the highest single correlation with the criterion;
- (3) standard errors of estimate for each regression equation were calculated;
- (4) regression lines were drawn on scatter diagrams of 9th grade final algebra examination scores and 8th Grade Mathematics averages;
- (5) expectancy tables were developed for each sex;
- (6) predictions based on the regression equations were cross validated.

Results

Analysis of the data resulted in the correlations shown in Table 1. Inspection shows that the highest correlation was that between the 8th Grade Mathematics average and 9th grade algebra examination score. A correlation of .70 was found for both boys and girls.

From the correlation coefficients and regression equations predictive devices were created in the form of tables and diagrams. The expectancy table (Table 2) predicts from Grade 8 scores in algebra the chances which students have of achieving a specified mark in algebra in Grade 9.

The upper half of the table shows that a male student with an average of (say) 65 in 8th Grade Mathematics has only 11 chances in 100 of achieving a grade higher than 65 on the 9th grade examination in Elementary Algebra. An 8th grade average of 75 means that the student has 21 chances in 100 of earning over 75 on the 9th grade examination. A student

TABLE 1
CORRELATION BETWEEN 9th GRADE ALGEBRA SCORES AND
INDEPENDENT VARIABLES

	Verbal Reason- ing	Numer- ical Ability	Abstract Reason- ing	Iowa Algebra Aptitude Test	8th Grade Average	9th Grade Exam
Verbal Reasoning	*	0.285	0.226	0.273	0.347	0.202
Numerical Ability	<u>0.240</u>	*	0.345	0.683	0.596	0.484
Abstract Reasoning	<u>0.349</u>	<u>0.178</u>	*	0.395	0.456	0.373
Iowa Algebra Aptitude Test	<u>0.310</u>	<u>0.685</u>	<u>0.340</u>	*	0.680	0.639
8th Grade Final Mathematics Average	<u>0.394</u>	<u>0.619</u>	<u>0.302</u>	<u>0.679</u>	*	0.706
9th Grade Algebra Examination Score	<u>0.524</u>	<u>0.460</u>	<u>0.374</u>	<u>0.565</u>	<u>0.696</u>	*

Girls in upper half of table (N=76)
Boys (underlined coefficients) in lower half (N=56)

TABLE 2
EXPECTANCY TABLE

8th Grade Mathematics Averages		9th Grade Final Algebra Examination Scores						
		65	70	75	80	85	90	95
<u>Boys</u>								
	65	11	6	3	1	0	0	0
	70	25	15	8	4	2	1	0
	75	48	33	21	12	6	3	1
	80	67	52	39	25	15	8	4
	85	85	75	61	48	33	21	12
	90	94	88	75	67	52	39	25
	95	98	95	91	83	72	58	45
<u>Girls</u>								
	65	8	3	1	0	0	0	0
	70	21	11	5	2	1	0	0
	75	53	30	17	8	3	1	0
	80	70	53	36	21	11	5	2
	85	87	76	60	43	27	15	7
	90	96	91	81	67	50	33	19
	95	99	97	93	85	73	57	40

with an 8th grade average of 95 has a probability of 72 chances in 100 of earning over 85 on the 9th grade examination. The lower half of the table provides similar information about female students.

TABLE 3

SCATTER DIAGRAM SHOWING PAIRED 8th GRADE FINAL MATHEMATICS AVERAGES WITH 9th GRADE ALGEBRA EXAMINATION SCORES
(Boys and Girls N = 132)

9th Grade Exam Scores	8th Grade Final Mathematics Averages												Totals
	64- 66	67- 69	70- 72	73- 75	76- 78	79- 81	82- 84	85- 87	88- 90	91- 93	94- 96	97- 99	
95-100							1	1	1	8	5	2	18
89-94						1	2	1	3	7	4	2	20
83-88				1		3	3	5	2	1			15
77-82			1		4	2	2	5	4				18
71-76	1			2	6	3	3	1	1				17
65-70			1	7			2	1	2				13
59-64					2	2	1						5
53-58	1	4	1	1	1	2	1	1	1				13
47-52		2	1		3								6
41-46				2	1								3
40 and below			1	1		2							4
Totals	2	6	5	14	17	15	15	15	14	16	9	4	132

Thus Table 4 shows a validity coefficient of 0.70 for boys, and 0.71 for girls. The predicted mean for boys differs from the obtained mean by .410, and for girls by .540. Seventy-five percent of the predictions were within the standard error of estimate for both sexes.

Cross-validation of the regression equations produced the following results:

TABLE 4
STATISTICS RESULTING FROM CROSS VALIDATION

	Boys	Girls
Validity Coefficient	0.70	0.71
Predicted Mean	75.98	74.97
Obtained Mean	76.39	75.51
Per Cent within Standard Error of Estimate	75.00	75.10
Per Cent above Standard Error of Estimate	12.50	14.40
Per Cent below Standard Error of Estimate	12.50	10.50

Conclusions

The results of this study demonstrate that in aptitude testing, high schools could effectively use the results of students' eighth grade mathematics averages for predicting success in ninth grade Elementary Algebra. This procedure provides the guidance staff and the pupil with valuable information concerning the probability of success. Other important factors which should be considered include motivation, emotional problems, maturity, conflicting interests and activities, study habits, physical disabilities (hearing, sight), and educational and vocational goals. While the final decision should be made by the individual student and his parents, a procedure of this nature may help to reduce frustration due to failure.

In using this procedure, a word of caution should be included to indicate that whereas two-thirds of the actual achievement of students can be expected to fall within one standard error of estimate above and below the predicted average, there is no way of knowing beforehand whether the counseled student will be one of the 33 percent to fall outside the standard error of estimate. However, with consideration given to other factors, predictive devices of the character described could be of assistance to teachers and guidance counselors in advising students.

References

Barnes, W. E., & Asher, J. W. Predicting students' success in first year algebra. *Mathematics Teacher*, 1962, 55, 651-654.

Callicutt, W. Problem of predicting success in algebra. *National Association of Secondary School Principals' Bulletin*, 1961, 45, 107-111.

Fay, L. C. The relationship between specific reading skill and selected areas of sixth-grade achievement. *Journal of Educational Research*, 1950, 43, 541-547.

Garrett, H. E. *Statistics in psychology and education*. (Fifth edition). New York: Longmans, Green and Company, 1958.

Mogull, R. G. The prediction of student success in elementary algebra in a Long Island school system. Unpublished M.S. thesis, C. W. Post College of Long Island University, 1965.

Mogull, R. G., & Rosengarten, W., Jr. Predicting student success in elementary algebra. *California Journal of Educational Research*, 1972, 23, 104-107.

D. COWPER

and

L. STEWIN

University of Alberta

An Examination of the Illusion Phenomenon in Soviet Set Theory: An Experimental Critique

Soviet set theory (Uznadze, 1966) holds that stimuli are differently perceived by various individuals, and that these perceptions are ordered by prior experiences. Most research issuing from this framework has been focused on the reactions of subjects to controlled experimental conditions, and has devoted little attention to pre-experimental measures.

In the present study, control subjects (those having no experimental experiences) and experimental subjects (those being exposed to "setting" trials) were compared on various measures usually considered indicative of strength of set. No differences between groups were discovered. This finding leads one to question the basic methodological assumptions underlying Soviet set theory. (Dr. Stewin is Assistant Professor in the Department of Educational Psychology, The University of Alberta; Donald Cowper is a doctoral candidate in the same department.)

In the Soviet tradition, set is conceived of as an "extraconscious state of the mind which has a decisive effect on the nature and course of mental activity" (Uznadze, 1966, p. 9). Within this framework, sets are considered to be integral states of the organism which control the conscious perceptions of objects and influence how similar objects will be perceived on subsequent encounters. Normally, sets operate at a subconscious level and affect perceptual processes without the individual being aware of them.

Set acquisition is considered dependent on a perception occurring in conjunction with an existing need and with the opportunity for need satisfaction. Once established, a set is never totally discarded, but remains ready to be reactivated under suitable conditions.

Uznadze contends that sets are a central (intellectual) rather than peripheral (sensory) phenomena and as such constitute a modification

of the cognitive processes. He conceives of man as operating on two levels, the impulsive plane of behavior (responding directly to a given stimulus) and the intellectual (mediated) plane, reached through a cognitive process termed "objectification". The impulsive plane of behavior is characterized by the action of fixed sets. However, when a set is not appropriate to the situation, man's cognitive reasoning powers are applied to clarify the interference which is present and, as a result, a more appropriate set arises. The characteristics of this theory of set have been dealt with previously in greater detail by Hritzuk et al. (1969), Stewin (1969), Hritzuk and Janzen (1970), and Hritzuk (1971).

The primary purpose of this study was to examine the veracity of the concept of set illusion. Uznadze (1966) reports that man generally perceives phenomena of inequality more easily and more accurately than phenomena of equality, and termed this behavior "functional asymmetry".

Uznadze suggests that this phenomena is due to the setting of the subject by some circumstance in ordinary life, outside the experimental situation. He argues that the probability of this occurrence is high as one setting trial has been shown to be sufficient to establish a set under certain conditions. Uznadze further suggests that such an unintentionally established set will be extinguished and superseded by a set more adequate to the actual situation when critical trials are presented.

A set can be established in the visual modality by brief, repeated tachistoscopic presentations of two unequal stimuli, usually geometric figures. During the initial series of visual presentations, called "setting trials", the two figures (circles) are always presented in the same spatial relationship to one another, for example, the larger on the right and the smaller on the left. Subsequent to each presentation, the subject is required to state whether the two figures appeared to be equal or unequal, and, if unequal, which appeared to be larger. This procedure is repeated for a predetermined number of setting trials. Immediately following the setting trials the "critical test", consisting of two equal figures, is presented. If a set has been established, the subject will display one of the following illusions. Either he will continue to perceive unequal spheres in their previously presented spatial relationship (assimilative illusion) or he will perceive that the two figures have been transposed (contrast illusion). Uznadze (1966) concludes that the number of contrast illusions is more indicative of set strength.

Critical trials are continued until veridical perception is reported on five consecutive trials or until a criterion of 30 presentations is reached. Tabulation of the critical trials is terminated at the first occurrence of veridical perception.

These formulations lead to the prediction that experimental subjects (those experiencing setting trials) should exhibit stronger sets than control (those not experiencing setting trials) subjects, and should thus require more critical trials to attain veridical perception. The combined number of contrast and assimilation illusions experienced by these subjects should be significantly greater than the illusion scores of the control group. Sets developed through the exposure of unequal figures

during setting trials should cause experimental subjects to perceive equal critical trials as unequal. Control subjects, however, initially called upon to deal with equal figures, would be expected to make more veridical responses during the critical trials.

The following hypotheses were proposed:

1. Experimental subjects in comparison with control subjects should require more trials to attain veridical perception in the visual modality.
2. Experimental subjects in comparison with control subjects should demonstrate larger illusion scores.
3. Experimental subjects in comparison with control subjects should give fewer "equal" responses before veridical perception.

Uznadze's (1966) contention that contrast rather than assimilative illusions are more indicative of set strength is the basis of the following within-group hypothesis.

4. Experimental subjects should exhibit more contrast than assimilation illusions.

Method

Sample

The present experiment employed random assignment of 79 grade nine students with a mean age of 15.6. Uznadze (1966) reports that the ease of establishment of set is very high in the preschool period, drops between 12 to 14 and rises again between 15 to 17 years of age. Thus subjects in the present study should have been capable of forming adequate sets. The experimental group consisted of 20 males and 21 females; the control group consisted of 19 males and 19 females.

Instruments

The setting stimulus card depicted a large circle (35mm) on the right and a small circle (22mm) on the left. Two equal circles (28mm) were presented as critical stimuli. A third card with a single black dot was used as a fixation point. All experimental trials were presented with a Scientific Prototype Three Channel Tachistoscope.

Procedure

Both experimental and control subjects were given the following instructions in an individual testing situation.

"This machine is called a tachistoscope and I am going to use it to show you some circles. Look in the eyepiece now and you should see a white field with a black spot in the middle. (Wait for the subject to look into the tachistoscope.) When I say ready, you should look at the black dot and I will show you two circles for a brief period of time. Each time I do this, please tell me if the circles are equal or unequal in size. If you think that they are unequal in size, tell me if the largest circle is on the right side or on the left side. Do you understand the instructions? OK, let's give it a try."

The fixation point was presented initially and the subject was instructed to look at it. Fifteen setting trials (0.10 sec. each) were presented to each experimental subject by the method outlined previously. Immediately following setting trials a series of critical trials was administered. Control

subjects were presented directly with the critical trials of the quantitative setting task, without exposure to the fixing stimuli.

Following each critical trial, the experimenter recorded the subject's response on a response sheet. Using the procedure outlined by Hritzuk (1971), critical testing continued until the subject either gave five consecutive veridical responses or attained a maximum of 30 critical presentations.

The four measures observed for each experimental subject were (a) number of trials to veridical perception, (b) number of contrast illusions, (c) number of accurate responses before reaching veridical perception and (d) number of assimilation illusions. For control subjects, measures (b) and (d) were subsumed by an error score. For the purposes of statistical comparison a similar error score was produced for each experimental subject.

Mann-Whitney U tests were used to compare the raw scores for experimental and control groups at the .01 level of confidence (Siegel, 1956). A t-test for correlated data was used to test the within group hypothesis. To summarize the experimental data, subjects were categorized according to their scores along each variable, at three point intervals.

Results

Hypothesis 1: Contrary to expectations, experimental subjects did not require significantly more trials than control subjects to reach veridical perception. There does, however, seem to be a very real difference between the shapes of the two distributions observed. (See Table 1, Trials to Veridical Perception.)

TABLE 1
TRIALS TO VERIDICAL PERCEPTION FOR EXPERIMENTAL (E) AND
CONTROL (C) SUBJECTS

Measure	Group	Trials						
		0	1-3	4-6	7-9	10-12	13-15	
Trials to Veridical Perception	E	3	4	5	4	1	3	
	C	14	2	0	3	0	1	
		16-18	19-21	22-24	25-27	>27	z ^a	Probability
Trials to Veridical Perception	E	2	2	7	0	1	-0.71	.238
	C	0	1	1	1	16		

Hypothesis 2: Again, contrary to expectations, experimental subjects failed to exhibit significantly more error scores than control subjects. (See Table 2, Number of Illusion Scores.)

Hypothesis 3: As expected, control subjects gave more veridical responses than experimental subjects, however, this difference did not reach significance. (See Table 2, Number of Equal Responses.)

Hypothesis 4: As predicted, experimental subjects exhibited significantly more contrast illusions than assimilation illusions ($t = 8.24$, $p < .01$, see Table 2).

TABLE 2

ILLUSION, ERROR AND EQUALITY SCORES FOR EXPERIMENTAL (E)
AND CONTROL (C) SUBJECTS

Measure	Group	Number of Occurrences					
		0 _a	1-3 _b	4-6	7-9	10-12	13-15
Contrast Illusions	E	3	8	6	3	6	2
Assimilation Illusions	E	33	7	1	0	0	0
		16-18	19-21	22-24	25-27	>27 _c	Probability
Contrast Illusions	E	7	2	3	0	1	
Assimilation Illusions	E	0	0	0	0	0	.0005 _d
		0 _a	1-3 _b	4-6	7-9	10-12	13-15
Error Scores	E	36	15	7	3	6	2
	C	33	14	4	3	11	4
		16-18	19-21	22-24	25-27	>27 _c	Probability
Error Scores	E	7	2	3	0	1	
	C	3	1	1	0	0	.001 _d
		0 _a	1-3 _b	4-6	7-9	10-12	13-15
Equal Responses	E	9	10	8	7	6	0
	C	14	3	4	2	7	4
		16-18	19-21	22-24	25-27	>27 _c	Probability
Equal Responses	E	1	0	0	0	0	
	C	3	1	0	0	0	.361 _e

a Denotes the number of subjects who did not show the specific response.

b The number of subjects who showed 1 or 2 responses.

c The number of subjects whose responses were all the same.

d Tested with t-test for correlated data.

e Tested with Mann-Whitney U test.

Discussion

The most surprising finding in this study was that control subjects who had not participated in setting trials required almost as many trials to attain veridical perception as did experimental subjects. Although there is no significant difference between the mean critical trial scores of the two samples, their distributions appear to be quite distinctive. As would be expected, a greater number of control subjects (14) perceived the equality of the critical stimuli on the first five presentations, compared with this

occurrence among experimental subjects (3). However, fifteen control subjects and ten experimental subjects were administered 30 critical trials without perceiving equality for five consecutive trials. Misperception by control subjects is not due to setting trials and may be described as perceptual error. If this control/experimental group paradigm were employed with a large number of subjects, variations due to error could be extracted from set scores to produce a "true" illusion score. An investigation of this nature is urgently required to determine if set illusions are merely perceptual errors or have their etiology in more basic personality attributes.

Comparable results were observed during pilot testing for the present study. The pilot project used the IBM 1500 computer system to present the experimental tasks. The inability of control subjects to perceive identical circles as equal was perceived as being a function of the mode of presentation. As a result the authors reverted to traditional tachistoscopic presentation of set stimuli. In light of the present findings computer presentation *may* prove a viable alternative to traditional methodology since greater experimenter control can be achieved. Further examination of the alternative methodology is deemed essential.

The finding that experimental subjects exhibited significantly more contrast illusions than assimilative illusions supports Uznadze's (1966) predictions, re-emphasizing the contention that contrast illusions are the most accurate measure of quantitative set strength. Assimilation illusions may therefore be indicative of a very weak or perhaps non-existent set.

The observation that experimental and control subjects did not differ significantly regarding the number of illusions experienced during critical trials may be interpreted as a consequence of the first finding, and was equally unexpected.

Results of this investigation pose a number of methodological questions pertaining to studies of Soviet set. The majority of set studies reported in the literature have been focused on the effects of setting trials on various experimental populations and individuals, however, variations between subjects prior to the setting trials has received little consideration. The results of the present study indicate that a re-evaluation of interaction effects between pre- and post-set conditions may be in order.

As noted earlier, further research is required to determine why an apparently large number of presumably normal (control) subjects experience difficulty in perceiving equality. This research might also focus on set in different modalities, in an attempt to clarify how pre-set differences affect the theory of fixed sets.

Illusions experienced by control subjects cannot be labeled as either assimilative or contrast illusions as either classification is possible only if setting conditions are known. As this is not the case, all non-equal responses for control subjects in this study were termed errors and are reported as the error score.

References

- Hritzuk, J. A comparative and experimental study of the psychology of set as related to personality. *Canadian Journal of Behavioural Science*, 1971, 3, 127-134.
- Hritzuk, J. & Janzen, H. A Soviet and Western concept of set. *Alberta Journal of Educational Research*, 1970, 16, 217-225.
- Hritzuk, J., Unrah, W., & Hertzog, R. Some Soviet approaches to the study of personality. *The Canadian Psychologist*, 1969, 10, 32-48.
- Siegel, S. *Nonparametric Statistics*. New York: McGraw-Hill, 1956.
- Stewin, L. The Soviet theory of set. *Alberta Journal of Educational Research*, 1969, 15, 95-102.
- Uznadze, D. *The Psychology of Set*. New York: Consultants Bureau, 1966. (Original Russian Edition, 1961.)

N. MEHRA

The University of Alberta

Factor Analysis in the Investigation of Multidimensional Educational Problems*

In this article, the author discusses the application of factor analysis as a technique in the investigation of multidimensional educational problems and presents the results of one such application. It is argued that any global rating procedure in such enquiries tends to oversimplify the problem while the mass of information collected is often too complex for most human minds to grapple with. Factor analysis enables the investigator to discover a few salient response patterns which relate the variables to each other in various ways. The data can then be more effectively analyzed in terms of these response patterns. The object of this presentation is to make available the results of a particular investigation (on the question of adopting a Semester System), as well as the statistical techniques employed. The latter should be of interest to research workers dealing with multivariate problems. The arguments and empirical evidence presented in exposition of the suggested analytic method are taken from the study "The Implications of Introducing a Semester System at The University of Alberta". (Dr. Mehra is a Research Director with the Office of Institutional Research and Planning, The University of Alberta.)

The Problem

In view of the rising public expenditure on higher education, Canadian colleges and universities have, in recent years, come under increasing pressure to consider operational changes which would permit a greater economy and efficiency in the use of available resources. A year round use of their buildings, equipment, and other resources, it is suggested, is one step in that direction. Most Canadian educational institutions traditionally operate on an academic calendar which starts in early September and ends in April, plus a short summer session. It has been argued that a year-round operation would not only permit these institutions to

*This is intended to be the first in a series of papers on methodology in educational research. The intention is to deal with a particular procedure (in this case factor analysis) using empirical data as illustrative matter. The advantages (and limitations) of the method should become apparent. Reader comment is invited. (Editor, A.J.E.R.)

use their resources for a longer period, but at the same time serve a larger student population. A year-round operation would also be economical from the standpoint of student achievement, since it would make it feasible for a student to complete his degree program in a relatively shorter period.

At The University of Alberta, the question of a possible shift from the year calendar to a semester calendar has been under continuous consideration since the early sixties. A year calendar is defined as an academic year divided into two parts (not necessarily equal in length), with admission to the University at the beginning of the first part and with the course unit the length of two parts. A semester system refers to an academic year divided into two equal parts, with admission to the University at the beginning of either part and with the course unit the length of each part. In addition to economic considerations, the University Administration has also been under strong internal pressures to consider such a change. A number of professional faculties and schools within the university were inclined towards a semester system, since it would enable them to organize their student programmes better. The academic faculties, especially those of Arts and Science, on the other hand, preferred the existing year calendar on the grounds that year courses permit a deeper and more concentrated study of the subject matter. A shift to a semester system, according to this viewpoint, would have an adverse effect on the quality of education.

A number of committees were established to examine this question. However, due to the complexity of the problem, and the subjective nature of committee enquiries, the question invariably emerged from these committees essentially unresolved. In 1969, the Office of Institutional Research and Planning was assigned the task of examining the implications of a change from a year calendar to a semester calendar. A number of special studies were directed towards different aspects of the problem. The present study deals with the analysis of faculty opinion and reactions to the academic implications of introducing a semester system at The University of Alberta from the standpoints of: (i) student study programmes, and (ii) faculty morale and productivity.

Design for the Study

The multivariate nature of the problem, and the plurality of the viewpoints involved, made it clear at the very outset that our task was twofold: (1) to identify important areas having a bearing on the problem; and (2) to measure faculty response with regard to these areas. The former required a theoretical analysis of the problem and the latter a judicious selection of design, measurement and procedures for the statistical analysis of the collected data. In fact, this approach enabled us to combine a proper concern for a theoretical framework with due respect for practical statistical considerations.

A review of the relevant literature and research studies pointed to the following areas as pertinent to the problem:

STUDENTS

1. Depth of study programs.
2. Standards requirements.
3. Morale and subject matter achievement.
4. Motivation and study habits.
5. Work assignments.
6. Pressures and strains.
7. Adjustment to University environment.
8. Breadth of educational programs.
9. Effects on extracurricular activities.
10. Counseling and guidance of students.
11. Effect on attendance time.
12. Effect on service courses.
13. Costs, especially in case of course failure.

INSTRUCTORS

1. Faculty workload.
2. Effects on teaching and research activities.
3. Adjustments in lecture planning, setting of examinations.
4. Assignment of courses consistent with interest and preparation.
5. Effect on research and other kinds of leave.
6. Effect on the engagement of new staff.

Instrument

Having identified the basic areas (or dimensions) the next step was to collect faculty responses on these dimensions. We decided to collect faculty reactions through the development of a questionnaire. In selecting possible items for the questionnaire, we recognized that one would extract from the analysis only what was included in the questionnaire to start with. At the same time we were conscious that one should not use too many items. This tends to introduce interaction effects from unknown sources so that it could become difficult to recognize and interpret what the different items are, indeed, measuring. This consideration led us to develop a faculty opinion survey questionnaire (*FOSQ*) consisting of 44 items related to the areas identified above. The questionnaire items were prepared in the form of simple "Likert-type" descriptive statements, the respondents being asked to indicate on a four-point scale the extent to which he or she agreed or disagreed with them. A five-point scale, which would have included the neutral category was avoided intentionally. We surmised that despite the absence of a neutral point on individual items, a person might still fall into the neutral category if his responses on a group of items were viewed collectively. This point is discussed later.

Sample and Response

The questionnaire was administered to a sample of 385 faculty members selected through stratified (proportionate) random sampling from among those full-time members of the faculty (1,055 in total) who were directly engaged in the instruction of students. The stratification was based on two criteria: (i) by faculty or discipline; and (ii) by professional rank. A total usable response of 321 (85%) was obtained—a reasonably high response for the purpose of analysis.

Methodology and Results

A. Five Factor Varimax Solution

The collected data were subjected to factor analytic techniques. Factor analysis is a branch of multivariate analysis which deals with the internal

structure of matrices of intercorrelations among variables. Its aim is to explain the intercorrelations among variables in terms of a smaller number of underlying concepts. In using this technique our object was to determine which faculty responses tended to group around certain identifiable concepts. In more precise terms, our intention was to identify clusters of items, where items within a cluster are highly correlated with each other but essentially uncorrelated with items outside the cluster. It was our hope to measure and analyze through this procedure, faculty response on various clusters instead of on each individual item. To this end, the 43 x 43 item intercorrelation matrix was computed and analyzed using the *Principal Component Method* (one item was considered redundant and was deleted from the analysis).

A tacit assumption of the principal component method is that what is common to a collection of variables can be decomposed over a number of components. As the name suggests, this procedure extracts, successively, principal factors until the total common variance for the given correlation matrix is accounted for. The standard practice, however, is to extract only the first few salient components and to stop when a sufficiently high proportion of the total variance is accounted for. This is justified under either of two assumptions, namely, (1) the remaining part of the variance is due to unique factors; or else (2) the components that have been extracted are the important ones, the rest being too minor to be capable of adequate interpretation (Harman, 1960).

The above analysis yielded seven significant factors which are unrelated to each other (orthogonal). On examining these factors, we observed certain encouraging features. First of all, the communalities for all 43 items were sufficiently high to indicate the adequacy of the amount of common variance extracted for each item (communality, symbolized by h^2 , is the squared sum of factor loadings in a row). Secondly, all items had either high positive or high negative loading (item loading is a numerical value which can be understood as a correlation; it tells us the extent to which an item is saturated with each of the factors) on the first factor suggesting the existence of a general bipolar factor. Thirdly the last two factors contributed less than 5% towards the common variance, suggesting that the best solution would probably consist of five factors. Accordingly, the intercorrelation matrix for items was again analyzed, this time to derive a five factor solution.

Once the principal factors are determined, the investigator is faced with the task of assigning some meaning to them. In other words, we need to determine how it is that items grouped together in a particular factor are conceptually alike, and then to name this similarity. However, as it often happens, this initial or orthogonal solution does not lend itself to a meaningful interpretation. This initial solution, consequently, is transformed into a "preferred" solution. This is chosen from an infinity of possible solutions which can be derived from principal components solution by changing the reference axes. This preferred solution rests upon the principle of simple structure, that is, we rotate the factor axes about the zero point thereby transforming the initial solution to an orthogonal simple structure solution. One such procedure due to Kaiser makes use of the *Varimax Criterion* (Kaiser, 1960, pp. 112 and 233). This procedure

TABLE 1
VARIMAX FACTOR SOLUTION FOR 43 ITEMS OF *THE FOSQ* (N = 321)

FOSQ Subtest	Item No.	FOSQ Factors					Communalities (h^2)
		I	II	III	IV	V	
Concentrated Educational Program	3	-.62	.26	.24	-.00	-.13	.52
	4	.45	-.17	.14	-.00	-.12	.26
	7	.65	-.00	-.11	.09	.07	.44
	8	.73	-.07	-.05	.13	-.12	.56
	9	-.59	.44	.38	-.23	.05	.74
	11	.63	-.10	-.13	.13	.21	.48
	13	.75	-.23	-.23	.09	.05	.68
	20	.74	-.37	-.21	.14	.08	.76
	21	.58	.06	-.30	.17	-.10	.47
	26	.62	-.33	-.06	.18	-.05	.54
	33	.70	-.21	-.16	.21	-.07	.61
	35	.74	-.34	-.19	.13	.02	.72
	37	.60	-.19	-.34	.11	-.05	.53
	42	.58	-.38	-.29	.16	-.11	.60
Varied Educational Program	1	-.39	.42	.40	-.11	-.17	.52
	10	-.20	.61	.28	-.06	.06	.50
	15	-.15	.49	.40	.09	.17	.45
	17	-.28	.62	.34	-.13	.10	.61
	30	-.42	.52	.44	-.04	.10	.65
	31	-.21	.56	.50	-.01	.14	.62
	32	-.34	.52	.29	-.16	.22	.54
	34	-.21	.52	.41	-.15	.04	.51
	36	-.07	.57	.38	-.07	-.07	.48
	38	-.25	.71	.17	-.12	.03	.61
	40	-.20	.57	.37	-.19	.06	.54
	41	-.22	.65	.17	-.14	.08	.53
Facility For Movement	2	-.31	.22	.59	-.10	.14	.51
	5	-.34	.45	.46	-.05	-.22	.59
	6	-.27	.21	.61	-.00	.02	.49
	18	-.15	.15	.70	-.07	-.00	.54
	23	-.14	.35	.54	.02	.04	.43
	24	-.09	.28	.65	-.09	.01	.51
	25	-.17	.18	.61	-.01	.26	.50
	27	.07	.34	.47	-.28	.04	.42
	28	-.08	.33	.67	-.14	-.06	.59
Faculty Workload and Productivity	12	.28	-.04	-.19	.70	.18	.64
	16	-.43	.34	.15	-.39	-.06	.48
	19	.48	-.18	.01	.50	.02	.51
	22	.45	.10	-.14	.57	-.09	.57
	39	.00	.34	.13	-.71	-.06	.64
	43	.34	-.09	.07	.54	-.19	.46
Future Planning	14	-.01	.09	.09	.09	.80	.67
	29	.09	.21	.34	-.14	.40	.35
Eigenvalues		7.88	5.92	5.61	2.61	1.35	23.40
Cumulative Proportion of the Common Variance		34	59	83	94	100	
Cumulative Proportion of the Total Variance*		31	54	76	86	92	

*The total variance refers to that of seven factors with eigenvalue > 1.00

selects that solution which maximizes the highest loading on a given factor and minimizes the smallest loading on the same factor. This procedure tends to emphasize the salient features of the factor, thus enabling the investigator to identify the general concept underlying the group of items having significant loadings on that factor. Table 1 presents the five factor varimax solution with items grouped and ordered under subtest (or dimension) titles.

One observes from the factor matrix in Table 1 that the items classified in each dimension yield “high” loadings on only *one* of the five factors. Every item in a given dimension loads high on the same factor, suggesting that each dimension can be construed as representing a definite facet of faculty response. Moreover, the two additional items (numbers 14 and 29) pertaining to future planning have high loadings exclusively on the same factor indicating that the faculty response on this dimension can be measured independently of the responses on other dimensions.

B. Reliability Estimates for the FOSQ Subtests

The next step was to check the reliability of each of these dimensions or subtests to determine if, indeed, each does measure some definite facet of faculty response. Three methods of estimating reliability could be used: (1) the split-half method corrected by the Spearman-Brown formula; (2) the internal consistency method; or (3) simply considering the communalities as estimates of reliability of the subtests. The split-half method was not considered appropriate as some of the subtests (especially 4 and 5) had only very few items. The modern technique for estimating reliability, called the “method of rational equivalence” employs a measure of internal consistency, or homogeneity of items in a subtest (Diamond, 1959, pp. 198-99). The Kuder-Richardson formula 20 is the most commonly employed formula of this nature. The distinct advantage this method has over the split-half method is that it is possible to divide a test in halves in

TABLE 2
ESTIMATES OF INTERNAL CONSISTENCY AND OF EQUIVALENCE
FOR THE FOUR FOSQ SUBTESTS (N = 321)

FOSQ Subtests	1 Coefficients of Internal Consistency KR20	2 Communalities of Subtests - Five Factor Varimax Solution	3 Communalities based on Five-Factor Oblique Solution (Promax)
Concentrated Study Programme	.78	.97	.70
Varied Educational Programme	.92	.78	.81
Facility for Movement	.86	.81	.83
Faculty Workload and Study Time	.25	.98	.86

many different possible ways and have many different estimates of reliability. The Kuder-Richardson formula 20 gives a unique estimate. In fact, if all the assumptions implicit in the split-half method are satisfied, the average of all possible split-half reliability estimates for a given test is identical to that provided by the Kuder-Richardson Formula (Ferguson, 1959, p. 281). For this reason, KR 20 was computed as an estimate of reliability, or internal consistency, for each of the subtests (Table 2). Communalities of the four subtests for the Varimax solution and the Promax oblique solution are also shown.

The estimates of reliability for each of the four subtests (shown in columns 2 and 3) seem satisfactory. In column 1, however, there is one very weak coefficient of internal consistency, namely, for subtest four. This is not surprising. The Principal Component Solution successively takes out factors which are powerful at the beginning, becoming weaker and weaker at each further extraction. On the other hand, this weak coefficient may have been the result of inadequate number of items for this subtest (Ebel, 1965, p. 333). For the purposes of this study, however, the estimates, especially for the first three subtests, seem quite satisfactory.

C. Hierarchical Factors

Having identified, and interpreted the five dimensions of faculty response, we were still left with the task of classifying individual staff members, as well as faculties, on the basis of their scores on these five dimensions. However, it was realized that such a step would yield too many categories and that a better procedure would be to proceed and derive higher level factors from the original matrix of intercorrelations. A five-factor, oblique, simple structure solution was therefore obtained by computer analysis. This solution is based on the same criteria as the orthogonal solutions, except that the orthogonality restriction is relaxed. In other words, the factors in the oblique solution are correlated. From these correlated dimensions it is possible to work out the higher level factors which are orthogonal in nature.

It was a pleasant surprise to discover that the oblique primary factor solution was not very different from the varimax solution. The oblique primary factor matrix yielded *three basic or higher level factors* with eigenvalues close to or above unity (eigenvalues are the squared sums of items loadings in a column). At the same time, we did not lose much of the common variance with these three factors in comparison with the five factor solution (Table 3). The three factor solution accounts for 83% of the common variance extracted by the five-factor solution.

On examining the item composition of the three factors, it is clear that all the items previously classified as in subtests 1 and 4 have now clustered under factor 1; whereas items grouped under subtests 2 and 3 have clustered under factor 2. Studying these items we find that for subtests 1 and 4 they refer to a deep and concentrated study of the subject area, and for subtests 2 and 3 to the flexibility of study programmes. These factors have been named accordingly in Table 3.

From the above analysis we arrived at the following conclusion: *That faculty reactions and opinions with regard to the year or semester systems*

TABLE 3

THREE FACTOR VARIMAX ROTATIONAL SOLUTION (N = 321)

Item No.	Factor Loadings			Communalities
	I*	II*	III*	
1	.61	-.34	-.16	.52
2	.60	-.27	.16	.46
3	.47	-.39	-.14	.39
4	-.10	.28	-.09	.10
5	.68	-.27	-.21	.59
6	.62	-.16	.04	.42
7	-.20	.45	.09	.25
8	-.20	.54	-.10	.34
9	.63	-.56	.05	.71
10	.62	-.21	.06	.43
11	-.26	.48	.23	.35
12	-.09	.73	.16	.56
13	-.45	.54	.07	.49
14	.13	.05	.80	.66
15	.64	-.05	.18	.44
16	.34	-.59	-.06	.47
17	.67	-.31	.11	.56
18	.61	-.14	.03	.40
19	-.11	.70	.03	.50
20	-.51	.58	.10	.60
21	-.26	.47	-.10	.30
22	-.01	.72	-.10	.52
23	.64	-.08	.06	.41
24	.64	-.14	.05	.43
25	.58	-.11	.28	.43
26	-.34	.54	-.03	.41
27	.49	-.19	.08	.28
28	.68	-.17	-.02	.49
29	.32	-.07	.43	.29
30	.72	-.31	.10	.63
31	.75	-.17	.16	.62
32	.57	-.36	.22	.51
33	-.35	.60	-.05	.48
34	.64	-.28	.05	.49
35	-.48	.57	.04	.56
36	.64	-.13	-.05	.43
37	-.46	.45	-.04	.42
38	.60	-.30	.02	.45
39	.18	-.58	-.04	.37
40	.63	-.31	.08	.50
41	.55	-.29	.08	.40
42	-.54	.49	-.10	.54
43	.03	.64	-.19	.45
Eigenvalues	10.90	7.33	1.39	19.63
Percent of Common Variance	56	37	7	$\Sigma = 100\%$

* Factor I is interpreted as Flexibility of Study Programmes and Mobility;
 Factor II as Concentrated Study Programs; Factor III as Future Planning.

can be described in terms of five broad dimensions and that these, in turn, can be further collapsed to give three more basic factors underlying the response.

D. Construction and Classification of Profiles

In order to classify respondents, we derived factor scores for each individual using their responses to each questionnaire item and the loadings of these items given by the three-factor analysis. The method employed was the “complete regression method” (Harman, 1960, p. 349). Using these scores we worked out an average or *neutral score* on each of the three factors and a *neutral region* (.43 standard deviation) around each neutral point. This region represents an interval in which are concentrated the middle third of the respondents, assuming a normal probability distribution. We knew that although probabilistically equivalent regions were assigned to the three categories of persons—namely, those who are for the year-system, those who tend to be neutral, and those who prefer a semester system, the actual persons falling in the three categories may not turn out to be the same. This could be, for example, due to the fact that whereas the above division into probabilistically equivalent regions is based on the assumption of an underlying normal distribution, in reality the underlying distribution be asymmetric or not normal.

In the classification of individuals, we considered their scores on the first two factors only. Individual factor scores for each of the two main factors were divided into the following three categories: (1) persons with a score of at least .43 standard deviation above the neutral point (+); (2) persons with a score of at least .43 standard deviation below the neutral point (-); and (3) persons with scores within the range of .43 negative or positive standard deviation from the neutral point (0). A combination of the three categories on each of the two main factors gave rise to nine categories. The individual respondents, 321 in number, are then placed into these categories on the basis of their factor scores.

E. Creation of Prototype Profiles

The prototype profile for each of the nine categories consists of the five mean subtest scores for the category obtained by averaging, subtest by subtest, the profile scores of respondents falling into that category. The nine prototype profiles, along with the number of individuals falling in each category are listed in Table 4.

It is worth observing at this point that each of the nine prototype profiles in Table 4 could be represented on a “linear continuum” which measures the degree of a respondent’s preference for one system over the other. Specifically, an individual’s preference for the year system could be measured by adding his scores on subtests 1 and 4 (Factor 2); conversely, an individual’s preference for the semester system could be measured by the sum of his scores on subtests 2 and 3 (Factor 1). It was also interesting to note that respondents in category 1 have generally the highest scores on subtests 1 and 4, and these scores decrease in value as one goes down the list of categories. Conversely, respondents falling in category 9 score the maximum on subtests 2 and 3, and their scores on these subtests generally decrease as one moves up the line (figure 1).

It was also observed that the nine prototypes could be recombined into three broad categories: (1) those who were clearly in favour of the year system (categories 1, 2, and 3); (2) those who were neutral or un-

TABLE 4
 PROTOTYPE PROFILES FOR NINE TYPES OF RESPONDENTS

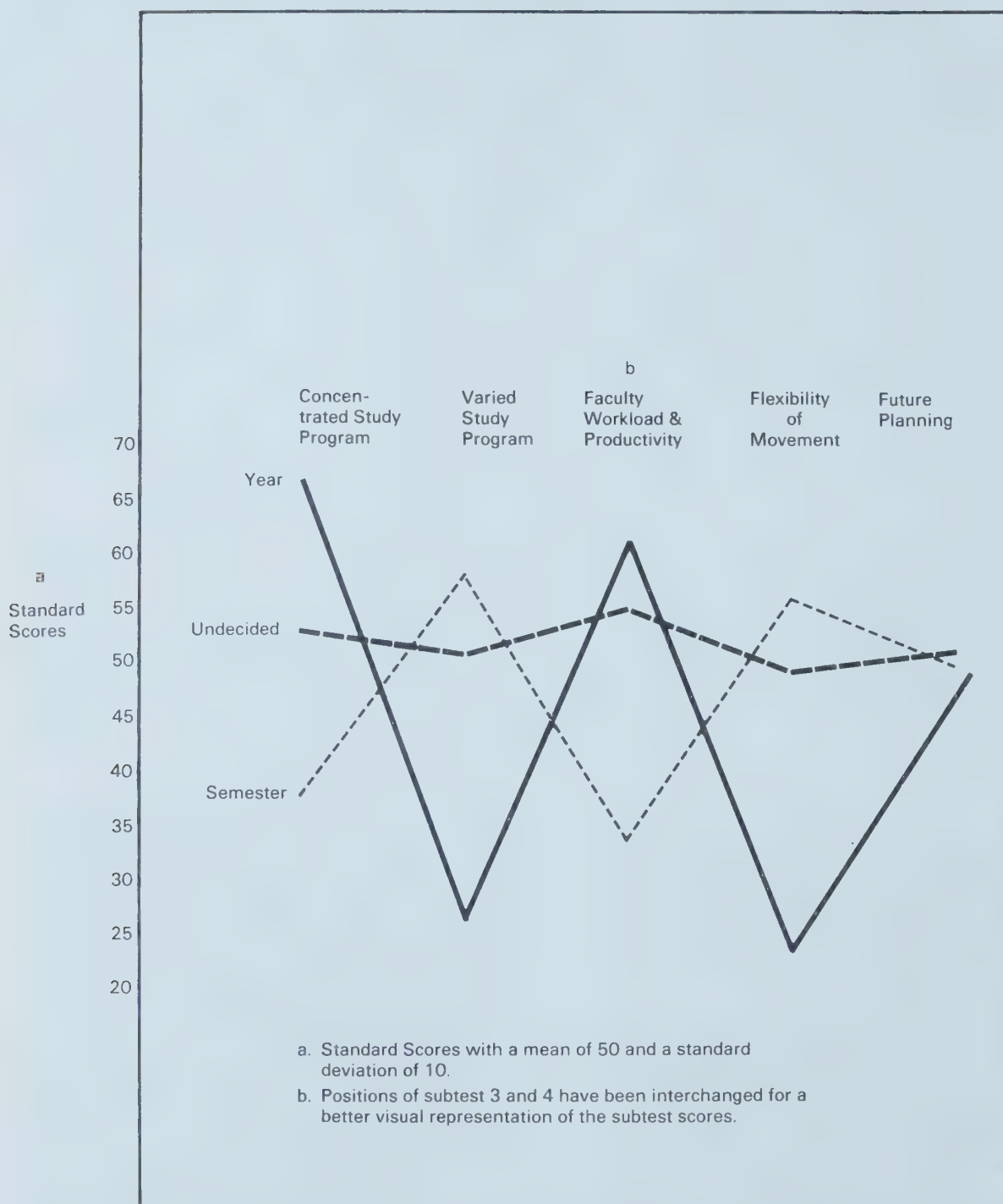
Mean Subtest Scores								
Cate- gories	Factor 1	Factor 2	Concentrated Study Programme 1	Broader Study Programme 2	Flexibility of Movement 3	Faculty Workload 4	Future Planning 5	No. of Respondents
1	-	+	91	78	61	20	15	In favour of "Year" System 10
2	0	+	87	85	67	19	15	26
3	-	0	84	76	64	15	15	2
4	0	0	80	86	69	14	14	Neutral or Undecided 10
5	+	+	77	95	74	18	15	154
6	-	-	71	82	66	12	12	1
7	0	-	69	84	69	13	15	In favour- "Semester" System 1
8	+	0	69	98	75	13	15	76
9	+	-	64	101	76	10	15	41
TOTAL								321

decided (categories 4, 5, and 6); and (3) those who were inclined towards a semester system (categories 7, 8, and 9). These three broad classifications are listed in the last column of Table 4. It can be concluded on the basis of these classifications that of the total of 321 individuals, 38 (12%) favoured the year system, 165 (51%) were neutral or undecided on the subject, and 118 (37%) were unequivocally in favour of a semester system. It was also observed that of the 165 individuals classified as neutral, there were, in fact, only 10 individuals who were truly neutral (0,0) on both factors. The rest 154 (++) seemed undecided in that they seemed to perceive certain merits appertaining to either system. It is evident that the "undecided" respondents do not differ significantly from the rest on the academic merits of the two systems as far as student programmes are concerned. The indecision of these persons resides in the fact that they see definite advantages for students and faculty of the semester system from the point of view of mobility. But, at the same time, they consider that a change to a semester system would increase the faculty workload.

F. Classification Based on General Bipolar Factor

A question which may be raised at this point is: how would those faculty members who were more or less neutral on the subject react when confronted with the need to make a definite decision in favour of one or the other of the two systems. This question was especially rel-

FIGURE 1
COMPARISON OF RESPONDENTS' PROFILE SCORES
ON THE YEAR VS. THE SEMESTER SYSTEM



evant in the case of those in category No. 5 (++) , namely, respondents with positive views on both systems. To answer the question, we decided to analyse faculty response on the basis of their scores on the *general bipolar* factor. As discussed previously all questionnaire items had appreciable loadings on this factor, either positive or negative. They could, consequently, be divided into two sets on the basis of the signs of their loadings. The first set, favouring the semester system, consisted of 25 items and the second of 16. Following this division, and taking account of the

four point scale used in the scoring of responses, we computed a score for each respondent using the formula: the sum of item scores on the first set - the sum of item scores on the second set. The respondents were then placed in one of the following four classifications defined by the intervals [6-47], [48-67], [68-88], and [89-129], where the points 6, 47, 88, 129 represent:

Least possible score	=	$6 \times 25 - 9 \times 16 = 6$
Below average score	=	$7 \times 25 - 8 \times 16 = 47$
Above average score	=	$8 \times 25 - 7 \times 16 = 88$
Highest possible score	=	$9 \times 25 - 6 \times 16 = 129$
The neutral point	=	$7.5 \times 25 - 7.5 \times 16 = 67.5$

It should be noted here that the larger the score, the more one is inclined towards the semester system (numbers 6, 7, 8, 9 represent the four point scale used in the scoring of the questionnaire items. Their sum equals to 30 which when divided by 4 equals to 7.5- the neutral point).

Table 5 shows the distribution of respondents over the above four classifications.

TABLE 5
DISTRIBUTION OF RESPONDENTS' SCORES OVER THE GENERAL
BIPOLAR FACTOR

Categories	Description	Range of Scores	Number of Faculty Members
1	Strongly in favour of the year system	6 - 47	32
2	Somewhat in favour of the year system	48 - 67	65
3	Somewhat in favour of the semester system	68 - 88	105
4	Strongly in favour of the semester system	89 - 129	119
TOTAL			321

On combining the first two and the last two categories in Table 5, we find that 97 respondents favour the year system and the remaining 224 favour the semester system. If we combine the middle two classifications to create a neutral classification, the two classifications—one based on the two factor solution and the other on the single general bipolar factor—yield results that are quite similar. This is corroborated by observing that not only the numbers of faculty members but also the faculty groups occurring in the neutral category are almost the same.

G. An Alternative Direct Approach

There was an alternative direct way to examine how the faculty feels about the question of changeover, since a direct question was posed on this subject. Item No. 9 in the questionnaire reads: "It is now time that this University move to the semester system". The distribution of responses (following the four-point scale used in the scoring of the item) on this item

indicates agreement with the distribution (Table 5) over the categories based on the general bipolar factor.

Conclusion

It is important to note, however, that of the two types of analyses—one based on the two basic factors and the other on a single general bipolar factor and giving similar results—the responses classified in terms of the former method seem to be based on more profound and considered reactions to a number of issues, whereas the latter classifies respondents on the basis of their manifest attitudes in general toward the overall question of the calendar changeover to a semester system. Indeed, we find that many decisions, arrived at after thoughtful reflection and careful pondering the various aspects of a problem, are quite different from those arrived at using quick methods. This is due to the fact that the former procedure is more analytical and rational, whereas in the other there is the possibility of one being carried away by emotionalism and personal bias. One should also bear in mind that the first analysis is based on more information than the other. In view of the above considerations, the first method of analysis seems definitely superior. As for the analysis based on Item No. 9, it is only a short-cut method and does not bring out the complexities of the situation. This “one-shot” approach, therefore, should not be used as an exclusive tool for investigation; it is merely confirmatory.

References

- Baldwin, R. G. Arguments used for and against the semester system. *The Baldwin Committee Report*, (Edmonton: The University of Alberta).
- Diamond, S. *Information and error*. New York: Basic Book Inc., 1959.
- Ebel, R. L. *Measuring educational achievement*. New Jersey: Prentice-Hall, Inc., 1965.
- Ferguson, G. A. *Statistical analysis in psychology and education*. New York: McGraw-Hill Book Company, Inc., 1959.
- Harman, H. H. *Modern factor analysis*. Chicago: The University of Chicago Press, 1960.
- Kaiser, H. F. Comments on communalities and number of factors. Paper read at an informal conference on “The communality problem in factor analysis” held at Washington University, St. Louis, May 1960.
- Mehra, N. The implications of introducing a semester system at The University of Alberta: A proposed study. Edmonton: The Office of Institutional Research and Planning, The University of Alberta, April, 1969.
- Mehra, N. A summary report: Report No. 1. *The divided-year study*. Edmonton: The Office of Institutional Research and Planning, The University of Alberta, October, 1969.
- Mehra, N. Employment conditions for students: Permanent and temporary. Edmonton: The Office of Institutional Research and Planning, The University of Alberta, October, 1969.
- Mehra, N. A comparison of the fall semester freshmen with the spring semester freshmen. Edmonton: The Office of Institutional Research and Planning, The University of Alberta, January, 1970.

R. A. CARLTON

University of Guelph

Popular Images of the School

Historically, the Canadian school has developed out of intimate linkages with other major social institutions; familial, economic, governmental or religious. Regionally differentiated and changing "popular" images of the school's identity reflect and in turn perpetuate these linkages. This paper discusses the importance of such popular images for school structure and roles, and attempts a systematic theoretical recasting in terms of a constructive typology. Further possibilities for empirical enquiry and for applications of the typology to an understanding of current educational issues are suggested. (Dr. Carlton is Associate Professor in the Department of Sociology and Anthropology, University of Guelph.)

Many practitioners of the social sciences drape the mantle of the prophet about themselves at the slightest provocation. Only a few members of the social scientific fraternity feel upset when called upon to provide or witness prophetic displays; unfortunately, the greater number of social scientists can stomach almost anything.¹

If, as Becker argues, the sociologist finds it difficult to resist the role of prophet or social critic, it is probably because, like any good performer, he is giving the audience what it wants. I am afraid that there is a much wider and more appreciative audience for utopian or doomsday pronouncements than for the cautious, abstract and stylistically narrow statements of social science. Then too, prophetic roles may be easier to play, if not to play well. Audiences do not cross-question an oracle; they need only to relate to it.

There is probably no area in which this tendency is more evident than the sociology of education. Sociological perceptions and research findings in this field are most often thoroughly overlaid or intermingled with evaluative and prescriptive notes. I suppose that this can be explained by the observation that social scientists are themselves educators, for the most part, entangled in all the biases arising out of long participation in and commitment to educational structures and processes.

They are not alone, however. Education, it turns out, is one of those

topics of easy generalization; there is no parent, politician, businessman, cleric, student or teacher who will hesitate to tell you what the school “really” is or “really” ought to be. Of course, this manner of speech suggests that, whatever he may have observed of the school as it exists in his society, the critic or planner is setting observation over against some image or model of the school which is, for him, “ideal” in the normative sense.

Surely these popular images of the school are important data for the sociologist. Reflection upon popular discourse suggests that at various times, within particular groups, some images have achieved very wide acceptance and have been important formative influences in the development of school systems. If we accept the premise that an understanding of the way in which people think about the school is relevant to understanding their behaviour in relation to the school, then it will be worthwhile to pursue a better appreciation of these guiding images.

It seems appropriate to attempt a constructive typology^{2,3} setting forward a number of the recurrent popular images. Each model will be abstractive or “iconic” in the manner of a Weberian ideal type, simultaneously presenting some features which are characteristically but not invariably associated both in popular perceptions and, to some extent, in the schools themselves. Clearly, no particular educational policy, philosophy or school structure will be quite congruent with any model. Nevertheless, analogues can function as theory in directing our attention to the patterning of internally consistent or systemic features, as well as in providing a classificatory scheme based on specific differences.

One of the functions of theory, I suppose, is to recast experiences—often familiar experiences—in ways which illuminate hitherto unnoticed interrelationships. Insofar as constructive typologies do this, providing an economical and somewhat elegant guide to patterning, they remain a useful style of theorizing. Ultimately, the dual potential of such models for informing research on the one hand and for integration into higher level constructs on the other, constitutes the true measure of their scientific worth.

When one moves from the formulation of a single model to the development of a typology, the relationship amongst the constructs becomes a crucial issue. Polarization along some continuum has been a useful procedure in many familiar instances, but the application of one or more critical distinguishing criteria offers an alternative basis. The point of departure for the typology attempted here is the observation that a great deal of the legal, and ideological background to the school is built upon correspondences and structural linkages with other societal institutions. Thus the school is seen as an extension of the family, as a branch of governmental activity, as an element of economic life or as a facet of organized religion, by way of examples. Each of these analogies involves a divergent rationale for the school and defines appropriate differences in educational objectives, innovative functions, authority structures, teacher and student roles, and formalized bonds with other institutions. Each construct is thus “isomorphic”, since it builds upon the identification of the school with another institution. Any use of the model, of course

involves an exploration of the limitations of that isomorphism, which may well be negatively instructive.

Seven models of the school are suggested here, although one might continue to build additional types with decreasing marginal utility. We will consider (1) The Familial Model, (2) The Political Model, (3) The Economic Model, (4) The Religious Model, (5) The Collegial Model, (6) The Custodial Model, and (7) The Community Model. It will be important to offer a brief sketch of each type before commenting further upon possible research applications. A word of caution: the order of presentation does not imply chronological sequence. A social historical review of the growth of the school in terms of the emergence, interplay and overlay of these models would certainly be a worthwhile endeavor, but one that far exceeds both the scope of this paper and the historical insight of its author.

The Familial Model

When Robert Ezra Park argued that formal education was “a rational procedure for carrying on and completing in the schoolroom a task that began spontaneously in the home”⁴ he was drawing attention to one of the most abiding popular images of our educational institutions: the school as an extension of the family. Here the school is charged only with attenuating and complementing the socializing impact of family, kin and community. The tasks undertaken by the school are not in this context essentially different from those accepted by the kin group, and the same basic social, literate or technological skills are presumed available, in varying degrees, in both home and school. What is latent in the socializing impact of the home is made the manifest objective of a somewhat more structured programme of school activities, but the two differ in depth or formalization rather than direction. The school, moreover, must be concerned with the total personal development of the student, to the same extent and along the same lines as the family.

In executing parental tasks en masse the school affords an economical relief to pressures upon the productive time of parents and older children. Such a rationale is particularly valid under conditions of familistic agricultural enterprise and marginal subsistence.

Such a model presumes upon the moral continuity of a relatively homogeneous community with extensive primary and kinship bonds. Only under these conditions can the school address itself to the moral and social formation of students without challenging the primacy and authority of parental orientations. Clearly, it is the parent who is the real client and arbiter of educational services. The affairs of the classroom have a high degree of visibility within the community and the parent will be a familiar visitor within the school.

The archetype here, I suppose, would be the frontier school as idealized in the popular mythology of the wild west, or alternatively, the one-room school of early rural Ontario. The “school marm” or “instructor” is selected as much for her personification of common values as for any special “book learning”, although she may well possess the latter. Deriving her

authority directly from the parents, whose children she holds in trust, the teacher plays the role of an elder sibling or surrogate parent.

As an extension of the home, the classroom itself becomes a sort of family, in which relationships are affective rather than neutral, inclusive as opposed to segmented. The authority structure of the classroom is not different from that which obtains between adults and children in the home, and the range of sanctions and rewards are similar in both settings. It is characteristic of a familistic school that no elaborate educational superstructure—economic, academic, political or administrative—can interpose itself between the home and the classroom, for that communion is its very essence.

In this model, the school is clearly not expected to act as an independently innovative force. Rather, custom and consensus are reinforced through consistency of socialization across home and school: change may be valued or even encouraged, but only along lines which amplify rather than challenge the established order. The school is asked to respond to changes in the parental community, playing an instrumental but not directive role.

Like each of the other models to be considered, the familial school has probably never been quite realized concretely, but its constituent notions have entered very deeply into our discourse about both schools and teachers. The concept of the surrogate parent has provided a focal point for a great deal of thinking about the teacher, forming, at one time, part of the statutory definition of his role.

It is not surprising that much of the present concern of parents confronted by educational bureaucracies is expressed in terms which evoke a familial model, nor that their creative efforts at “community” schools involve the parent as teacher while minimizing the divergence of home and school environments. Indeed, this might have been predicted as an occasional by-product of increased leisure which, paradoxically, facilitates the resumption of less efficient but more personally rewarding styles of service.

Parent-teacher associations, originally intended to affirm the continuity of the two groups, have increasingly become the forum for manifestation of differences, or have been turned to other uses by the teachers.

The Political Model

Despite the continuing linkage of schools to the family, or to other religious and economic institutions, one cannot fail to observe that contemporary schooling is, above all, a governmental, which is to say political, task. Moreover, this setting is widely legitimated by defining education as a necessary extension of the activity of the welfare state.

In an earlier role as facilitator, the democratic state had sought, through some monopoly of force, only to maintain a framework of ensured reciprocal rights within which individuals and groups might set and search their own ends. As egalitarian thought gradually eroded the acceptance of vested privilege, governments became increasingly active in delineating and seeking the welfare of the body politic. Governmental authority and civil service swelled to encompass tasks customarily identified with personal

and familial responsibilities, not the least of which was the intellectual, social and political formation of the young. Education, like health, provided the foundation for a gargantuan emergent bureaucracy.

The conception of education common to . . . statesmen and public leaders is that education is primarily a preparation for citizenship . . . the training for citizenship that has always been assigned a chief function of state systems of schools has been along political and social lines. The aim of education was to prepare the individual to exercise the right of suffrage intelligently, to perform the duties of citizenship fully and honestly, to discharge the duties of office satisfactorily.⁵

This context discloses a markedly different image of the school. Here, the aims and objectives of education come to be stated in terms of the formation of "good citizens", implying law-abiding patriotic tax-payers, trained and motivated to contribute toward the achievement of state-defined economic goals. The individual's "welfare" is articulated within the established institutional framework and those who fail to evidence valued motivations, acceptable academic and economic attainment, or sufficient respect for law and constituted authority are likely to become the unwilling recipients of further "welfare" services, correctional, medical, consultative or punitive. Working in a referral network with such "back-up" agencies, the school becomes, in a new way, an important formal agent of social control as well as a socializing and orienting framework.

State authority supersedes notions of parental "rights", and government intervenes when families or communities fail to provide the extent or style of physical and social care sanctioned by law. Nor is this analogy with health lost upon political apologists: in commenting upon the issue of state intervention in the case of the Amish communities, a U.S. government spokesman recently described compulsory formal education as "immunization against the disease of ignorance".⁶ From this peculiarity, albeit necessarily ethnocentric perspective, education is seen as a quantitative variable in the dimension served by public schooling, and qualitatively divergent styles of education may readily come to be defined as "ignorance". Yet this illustration directs our attention to an important issue linked to the political model of the school: the ambiguous position of minority groups.

Governmental authority, unlike that of family or church, characteristically has a firm territorial base. When school systems are organized on a scale coextensive with political boundaries, the common educational experience must embrace groups which are heterogeneous in economic status, language, custom or religion. On the one hand, this is an abiding rationale for public schooling, that it reaches out to overcome the static economic and social inertia of "disadvantaged" minority groups. On the other hand, it has been observed repeatedly that while some minorities desire nothing so much as to lose their visibility through assimilation and social economic mobility, other groups value their identity and may seek vigorously to maintain a costly special status.⁷ In the first sort of situation, public education may function to perpetuate rather than level differences⁸ precisely because the cultural and class biases of the schools become selective mechanisms ensuring the differential success of minority group members. It is this sort of situation which is so familiar to us from

studies of the educational disadvantages of the American Negro or the urban poor. In the second sort of situation, public school systems pose a threat to the identity and perpetuity of the minority group, mitigated only by the selective rejection of minority members which, to some extent, defeats its own purposes. To date, this has been the case with Franco-Ontarians.⁹ In any case, the political model of the school must assume a shared cultural core of values, technology and conduct norms which may justifiably be imposed upon all comers, and which therefore defines the legitimated parameters of cultural pluralism, or conversely, the extent of Anglo-conformity required of all citizens.

The teacher, here is no longer a stand-in parent, but a "civil servant", a representative and agent of the established institutional order. Although concern for the pupil still ranges from skill learning through to moral formation, relationships with students are depersonalized by the bureaucratic school structure, which inevitably demands routinization of tasks and role performance.¹⁰ Centralized authority, teacher training, inspection and curriculum supervision, as well as a career line characterized by horizontal rather than vertical mobility, tend to orient the teacher toward the school system and away from a client or community frame of reference. Informal sanctions supported by the family are supplanted now by the use of formally conditioned rewards and punishments which may oppose home and school.

For his part, the student may well find himself within a situation which challenges the values and life-style of his kin or community, through an alien curriculum or invidious peer-comparisons. Demands upon his behaviour are codified, and performance is assessed and recorded in highly standardized comparative terms. Far from being familistic, the school presents all the problems inherent in coping with large formal organizations.

Informally, as well as formally, the political school emphasizes its linkages with all levels of government, with other government agencies, or with the military, as in the case of the cadet corps. Effective political socialization demands control over courses and teaching materials such as texts. Appropriately edited curricula in history, social studies or civics enhance the adaptive and reproductive functions of the school, which is not expected to innovate in ways which challenge the rightness of the established order. "Progress" is defined primarily in technological and economic terms, in directions already charted by vested political interests.

Alternatively, political "progress" may be defined as broadly linked to the intellectual and moral upgrading of the populace, as in Ward's¹¹ conception of "sociocracy", from which he argued the necessity of state control in education. In Ontario, the Ryersonian conception of the common school is probably the closest historical approximation to a fully articulated political model. The abiding force of this image is evident, however, not only in the realization of the provincial school systems but in the sense of naturalness with which we continue to regard government monopolies in education.

The Economic Model

A very different image of the school is projected when one begins with an accent upon the extensive linkages between education and the world of work. Viewed as an agency of occupational recruitment, training and selection, within a market setting, the school takes on new functions and priorities. Historically of course, this model did grow out of the political, as the following observations made in 1905 clearly suggest.

In recent times . . . a new interpretation of education for citizenship is being given. It is that education is to make the individual an economically productive social unit, and hence a valuable citizen . . . Especially in our large urban communities, with great numbers of foreign immigrants, is it recognized that economic efficiency is one of the first essentials of good citizenship, and that such training must become a function of the school.¹²

More recent trends, however, suggest that the economic image is a distinctive one, and that the school as an extension of the commercial or industrial life of society presents analytically unique features.

Education attains unprecedented economic importance as a source of technological innovation, and the educational system is bent increasingly to the service of the labour force, acting as a vast apparatus of occupational recruitment and training.¹³

When one sees the school primarily as a sort of factory from which neatly packaged bundles of occupational skills roll into the labour market, familiar objects and processes can take on new meanings. Students become "raw materials" to be sorted by quality and shaped to divergent uses, if they are not scrapped altogether. As a producer—in this case of labour—the school becomes an integral component of the market system, and must be careful to adjust its production to market demands: educational institutions should spill out into the work world just the right kinds and quantities of labour required to keep the economy flourishing. A surplus of liberal arts graduates can be stockpiled in graduate schools over the short run, but in the long run may prove just as embarrassing as an overabundance of unskilled labour. Through differential allocation of financial support, facilities or status, as well as through active recruitment or quota restriction, academic and occupational specializations are made responsive to changing market demands.

The task of sorting students for placement within the occupational structure provides the rationale for an elaborate selection process characteristic of this economic model. By scholarships, screening devices, grading, ranking, promotions, failures, sponsorship or "cooling-out" tactics, students are retained, channelled or ejected at crucial points in their conveyance through the school system. On occasion, the schools may act as a reservoir of labour, limiting supplies by upgrading demands for occupational entry, in concert with industry and commerce.

Ease of transition to the labour force presumes a certain proximity of curriculum to the social and skill content of work roles, increasing in terminal branches and at tertiary levels. Linked to the economy through governing bodies, licensing boards or professional associations, the school attempts to ensure the continuity of the work-preparatory experience and the effectiveness of its placement functions. Job training programmes which

originate within the work setting, for example, may be formalized and transplanted to an academic locale such as a university or community college. Apprenticeships or internships may be retained, but their roots are now firmly planted in a curriculum which remains highly responsive to both the occupational groups and their employers, both of whom have vested interests in the rate and style of recruitment. Such pragmatism sounds a characteristic note in this perception of the school, for practicality and applicability are the basis of the educational experience. Even “liberal” or “general” studies are legitimated as creating adaptable, versatile potential employees, or as productive of discipline specialists whose work can eventually be applied in the service of a more prosperous economy.

Perhaps the most startling transformation occurs in the role of the teacher. Efficiency demands specialization, with subject-period timetabling coming to constitute a sort of assembly-line processing by a battery of skill-oriented experts. As consensus on educational objectives crystallizes about valued employable skills, broader concerns for character development or social formation are replaced by an emphasis on training along occupational or discipline lines. Each teacher relates in a secondary and segmental way to the skill development of his students, using the goal of vocational practice as his referent for curriculum design, and performance evaluation. In this framework, the teacher becomes the agent of a vocational specialty, of a discipline or a technology, with which he may identify primarily. In his career line, collegial references and self-image he may be first a practitioner and only secondarily a teacher: to some extent the articulation of his work with the labour market demands this. Moreover the measure of his accomplishment may be the successful work placement of graduates, as opposed to any other independent criteria.

Innovation is here the explicit task of the schools, which become centres for industrial and military research, as for the various forms of social engineering. Yet financial and ideological controls ensure that such change augments rather than threatens established economic institutions and belief-systems. Basically, the formal educational setting is entrusted with improving the technology of material production and services, with upgrading work skills in an accurate anticipation of changing demands, and with a host of information-finding and processing tasks ancillary to the economic life of the community.

Economic norms now govern educational enterprise, so that “rationing of resources”, standards of “productive efficiency” and “per capita costs” are scanned for guidelines in the “processing” of students. In marketing their educational “products” schools are drawn into competition, vying for scarce resources of apt students, building marginal differentiation of the training offered, and selling their “brand name” to employers, graduate schools, or professional bodies. Students, too, are increasingly sensitive to the market value of their institutional affiliations and degrees.

While this image was initially confined to “technical” branches of education, rapid occupational fragmentation and technological upgrading have amplified and highlighted economic dependencies upon formal education. The somewhat uncomfortable union of professional schools and liberal arts colleges has further propagated this model, popularly employed

now in respect of virtually all schools. Thus, while the polytechnical institute, community college or professional faculty may conform most closely, this image of the school as an extension of the economy now strongly conditions many of our ideas of what schools "really are" or what they "ought to be doing".

The Religious Model

From a logical perspective, the claim of organized religion upon the educational process admits no middle ground: its sacred title is either prior to all secular demands or worth nothing. In practice, however, the churches have proven shrewdly flexible in negotiating their educational interests. Archetypes such as the mediaeval university, the mission school, the seminary, or the parochial school of Roman Catholic peasant communities testify to the hybrid strength of the religious model of the school.

If the church is a divine communion, an exclusive ministration of morality, the fount of our world view and the agency of our personal salvation, then formal education is integral to its functioning. As so many religions have seen it, life is a preparation, a route to the divine and the eternal: within this perspective, the fundamental task of education is to prime the individual for his journey rather than to equip him for worldly success. Although church schools have never been wholly indifferent to the latter, it is the ordering of priorities here which makes formal education a natural and necessary extension of missionary and salvationist religions.

The objectives of religious education can be viewed from several different levels. On the individual plane, it is a thorough socialization to the belief-system, conduct norms and expressive rituals which is sought. At the collective level, the school becomes an important interactional focus for the maintenance of an "elect" identity: by means of social, recreational and facilitating groups, involving the adult community, as well as through the classroom, the school promotes in-group solidarity. At yet another level, the religious school may claim a sacramental function in creating and sustaining a mystical spiritual union, monopolistically dispensing special "graces" or religious experiences.

Like the familistic school, the religious school relates to the student in an inclusive way: his entire formation will be the outcome of a consistent curricular emphasis, participation with a homogeneous peer group in a round of activities acknowledging the primacy of religious values at many points, and of interaction with appropriate adult role models.

The teacher here is the representative of a sacred order: typically a guru, minister, priest, or teaching "brother" or "sister". Divinely called to this vocation, he has behind him the full weight of spiritual and ecclesiastical authority. His teaching is characteristically authoritarian, albeit benevolent, and his disciplinary control derives in some measure from the sacred "apartness" of his person. I can still recall rather vividly my own student experiences in a religious school, where we were warned regularly and solemnly that disobedience or disrespect to teachers constituted sacrilege and thus jeopardized our already scant hopes of salvation. Student-teacher relationships in such situations are constrained by

the radical hierarchy of the appointed or anointed versus the laity, a personal refraction of the sacred-profane dichotomy.

Linkage of this school to the church is so immediate and direct as to be almost inclusive. Commonly, the school is wholly controlled and operated by the church, with little visibility as a distinct institution. This may be reflected in the spatial proximity of church and school, often housed within the same building. Clergy regard teaching or school administration as basic to their role, and most often combine these tasks with group worship functions. Parental "rights" are recognized, but the exercise of these rights is governed by church defined and sanctioned "responsibilities" prescribing use and support of the church school. Toward political and economic claims upon education, the church is likely to be even more defensive.

Church schools may be innovative or protective dependent upon the societal status of the religious group in question. Established church schools tend, obviously, to be protective of the status quo. Sectarian groups may be inner directed either as a tactic for survival or as a function of their "elect" ideology; alternatively they may be outer-directed in a proselytizing missionary way. Thus religious schools bear the same relationships to the established institutional structure as do the churches themselves.

The religious image of the school still colours much discourse about education in Canada, and receives varying degrees of statutory recognition across the provinces. In Ontario, even the public school system shows very strong vestiges of its religious ancestry, including the legal prescription to inculcate "respect for religion and the principles of Christian morality", and residual linkages such as the special school-visiting rights accorded the clergy:

Every clergyman is a school visitor in the municipality where he has pastoral charge. School visitors may visit public schools, may attend school exercises, and at the time of a visit may examine the progress of the pupils and the state and management of the schools, and give such advice to the teachers and pupils and any others present, as they deem expedient.¹⁴

The Collegial Model

Notwithstanding the force of the economic and political images, educators themselves have by and large arrived at a quite different picture of the school. From their point of view, education is an activity involving very special, even esoteric kinds of knowledge: the school, then, is basically a setting for the expertise of a group of professionals. Another way of expressing this would be to suggest that schools are an extension of the activity of a more or less autonomous professional colleague group.

The professional educator is likely to view himself and his colleagues as the only persons who really know "what the school and education are all about". As possessors of a monopoly of knowledge, educators are alone competent to set educational objectives, to decide upon curricula, teaching methods or resources, to establish teaching competencies or to evaluate outcomes. The views of parents, businessmen, politicians or student clientele are discounted on the grounds that such "laymen" do not have the necessary knowledge or training, and are therefore not competent to exercise judgment in educational matters.

Observers of the growth of the professions have drawn attention to the importance of the quest for "license" and "mandate"¹⁵ in the development of a powerful collegial body. The extraction of "license" ensures public recognition that the right to practise is dependent upon access to a body of expertise. De facto, this implies standing within an organized professional body. Public "mandate" gives the colleague group the right to control the conditions of work, the process of occupational recruitment, the setting of work goals and the standards of competency in practice, on the assumption that these functions also require the expertise of "insiders".

To the extent that teaching together with its overhead of research and development has attained "professional" status, educators have become increasingly prone to view themselves as the more or less autonomous core of the school system. The claims of government, industry, commerce or of parents challenge their elite status in educational matters, and are opposed with increasing vigour. Teachers rally their students to resist the "corrupting influences" of big business, the "insinuations" of politics, the "intellectual fetters" of organized religion, or the "banality" of parental expectations. Educators alone really know how to guide the formation of the young, and it becomes a sacred duty to protect students from the manipulation of those less altruistic or less expert. Teachers and administrators committed to this model see the school board as a collection agency rather than an instrument of policy formation and public direction. Likewise parents are viewed as another group to be educated rather than as a point of reference for the orientation of the school.

The teacher, then, stands at the very centre of this picture of the school, which assumes an elite control of expertise. The aims of education relate to development within existing monopolies of knowledge, recruitment to the elite and maintenance of societal dependencies upon their vested skills. To some extent the school becomes an apologist and proseletyzer for those intellectual and technological styles which constitute the common wisdom of the educators, and form the basis for their status claims.

In turn, this supports a wholly new perspective upon the role of the school in innovation. Mere resistance to industrial, political, popular or religious interests gives way to active protest and intervention. The ivory tower of learning becomes a fortress from which crusading educators foray to challenge any aspects of the social, economic or political life of the community, presuming its ultimate dependence upon their expertise. Even where professional educators are restrained from social action, they may yet choose to play the role of societal conscience or prophet.

Alone the possessors of the wisdom and skills requisite to "right" action, and to the "proper" development of society, these educators may perceive the school as a mission charged explicitly with changing the society within which it finds itself.

The collegial school is client-centred, but interest is polarized about two kinds of engagement. Selective recruitment ensures regeneration of the elite while securing the commitment of some accepting and acceptable students. The majority of pupils, however, achieve lower levels of certified expertise for export to the non-academic world where its value is contingent upon

continuing societal acceptance: each pupil thus becomes an apologist for the kind of education he has received, and incidentally, for the educators themselves.^{16, 17}

Monopolies of conventional wisdom can be challenged only by claimants to new styles of knowledge, usually from outside academia: this accounts in part for the vigor and hostility with which organized learning reacts against freelance, entrepreneurial, maverick or marginal types who may achieve a competitive hold upon its clientele.

The authority system of a collegial school is hierarchial by expertise, the latter being evaluated with reference to the development of the discipline itself. Thus teaching is considered as lesser evidence of expertise than research, and the education of recruits to a discipline is regarded as more vital than the servicing of future non-academics. This discipline may take a "subject" focus at higher levels, while at elementary levels it is more likely to be defined as "education" itself.

Perhaps a contemporary arts faculty approaches the collegial model more closely than any other school, but there is strong evidence of a growing use of collegial images on the part of the new "professionals" in our elementary schools.

The Custodial Model

Many observers have already drawn analogies between the school and institutions such as the prison or mental hospital; comparisons which suggest that schools can be viewed primarily as custodial agents.

"Custody" is a cultural complex to which sociologists have directed relatively little attention. Almost every larger society, however, seems to have legitimated processes by which certain whole classes or groups—criminals, aliens, or "madmen" for example—can be interned, with the concomitant denial of rights to full societal membership and participation. Such custody involves defining those in question as virtual "non-persons", with the dual aims of exercising control over their behaviour in the short run, and of effecting adequate socialization or resocialization in the long run. Sometimes, of course, custody is invoked not because individuals do not "fit" with the society, but because a massive involuntary relocation and resocialization is sought, as in the case of conscripted military or colonial labour compounds.

Custody, as institutionalized, involves the recognition in custom and law of processes for custodial assignment and of custodial status, together with a legitimation of extraordinary means for containment, control and behaviour modification, usually in the context of a "total institutional" setting. In some instances, this involves a primacy of control functions, as in the case of the criminally insane; in other cases such control as is effected may be largely instrumental to specific socializing objectives, as in the "training school". Moreover, while the custodians have been held responsible in terms of ends—control or change, or both—they have generally not been held strongly accountable to the public for the means employed, which tend to have a low visibility in any case.

Much of what could be noted in connection with custodial arrangements

would relate to the discussion of "total institutional" settings, to which Goffman¹⁸ made a classic contribution. Nevertheless, the notion of custody and a class of custodial institutions would remain analytically distinct, since ascription is a definitive note here. The structural, social psychological and sub-cultural attributes identified with "total institutions" arise, by contrast from the routinization of a full round of activities for large numbers within a single setting. The concepts clearly overlap in some empirical applications, but can be seen as analytically distinct.

The notion of a total institution is cross-classificatory, it should be noted, with the present typology. Clearly it would be possible to find religious, political or familial schools organized within total institutional settings, as in the cases of the novitiate, the military academy or the private boarding school, although these may also reflect custodial or other elements, since no pure types are to be found empirically.

The rationale for the custodial school is simply that children are not yet full members of any society. Conduct is unreliable, judgment is embryonic, knowledge and experience are limited: the child is not yet "formed" as a full "person". Such a group can be sorted out to be controlled and shaped by the school, which is legitimated and fashioned after custodial models.

While the most obvious examples of schools reflecting custodial thinking are perhaps "training schools", "rehabilitation centres" or "strict" boarding schools, the notion of custody has been of formative importance in public school systems as well.

Entry to a custodial school is ascribed in terms of criteria such as age, health, deportment, or cultural status; release is contingent upon change, or presumed change in the individual, or in societal evaluation of the criteria themselves. Internal selective processes then have little weight except as they bear upon these criteria for continued detention.

There exists here, as has been noticed as well in total institutions, a radical dichotomy between the custodians and those in custody: teacher-student relationships take on much of the character of staff-inmate interaction. The dichotomy is supported by a radical system of deference and a highly visible differentiation of privileges and facilities. Routine handling of large groups of students involves a denial of individual claims based on statuses external to the custodial setting. This is reinforced psychologically by depersonalization tactics which include exposure, social contamination, deprivation of expressive control, legitimation of humiliation as a behavioral control, and effective use of degradation ceremonies. Observation of the way in which "humiliation" is used in the classroom, with predictable "looping" effects in reciprocal "face-saving", together with clues such as the use of the third-person by staff in reference to students who are present to the interaction, reinforces the impression that much of the control dynamic centres about denial of full "person" status.

Students in such a setting are uniformly imputed to be unable to make appropriate decisions regarding cleanliness, bodily functions, diet, recreation or work organization: continued denial of personal competency through external regulation functions to legitimate the need for custody.

One of the most obvious traces of custodial thinking in the schools is the residue of "busy work", which presupposes that even "useless" work functions as a control by inhibiting opportunities for personal decision-making, and thereby, for proscribed behavior. It functions, as well, as a denial of personal efficacy and worth, with the potential latent socializing effect of alienation from work-endeavor in general—an important problem in schools today. Routine wastage of personal time in "waiting", or "lining up" activities, in deference to "busy" teachers whose time is obviously valuable, may have similar roots and effect. In general, the response of students, psychologically and sub-culturally, to such a setting is problematic and certainly deserves more attention than can be afforded here.

Such schools, based on the primacy of a control function, are clearly not designed to be innovative. Linkages are basically with those chartered to exercise custody—judges, legislators, doctors, parents—or with related custodial institutions involved in a network of referral and transfer.

The Community Model

A final model, which can also be explored briefly, is that of the school as a community. Negating the import of any external linkages, this model presents the school in relative isolation. Such an image is arrived at by assuming that the territorially based school constitutes a quasi community or small society and by extending to it those expectations of relative autonomy and participation characteristic of the "democracy".

A large education complex such as the modern university is in many ways a "community": the campus encloses a full round of activities for a heterogeneous population demanding a wide range of facilities for work, sleep and play. As opposed to a single goal-directed formal organization, the "school" comes here to be seen more as "milieu" or setting within which individuals, groups and organizations coexist in some sort of symbolic adjustment and social accommodation.

This school is not a specialized activity of the larger society but a subsection of that society encompassing a wide range of specializations. As a democratic society in miniature it will possess its own government, police, media networks, a sense of its own history and a distinctive campus style or sub-culture. Of course, in the case of any real school, this image ignores some aspects by directing our attention to others: yet it is precisely this selectivity which makes its use so provocative, particularly among contemporary university and even high school populations.

In many respects, contemporary schools could be viewed as "frontier" communities, to which established institutional controls—economic, legal and religious—have been weakly and ineffectively extended. Under conditions of novelty, unrest and relative anomie provide the ground for movements of social protest and reconstruction.

In Canada, by weight of tradition, the community image is a democratic one: students, teachers, administrators or ancillary personnel are viewed as constituencies to the democratic process. Educational aims are not set by a single group or organization; rather, each pursues his own goals in conflict or cooperation with others similarly self-directed. In this school

as in the larger society, objectives are presumed set by those who pursue them.

Such a model does not present us with typical structural or innovative features, but asserts, by contrast, that each school has or should have a unique social history. Patterning is to be found primarily perhaps at the level of process in community growth and change. Stated more concretely, such a model does not tell us so much what the school should look like, as how it should develop—after the manner of a relatively autonomous democratic community.

WANTED: Employment for Seven Models

Of course, we could continue to build models, each successive image sounding a somewhat less familiar and less relevant note. Such construction is certainly entertaining by comparison with many tasks that fall to the sociologist today, yet I suspect this very appeal to be one of its chief weaknesses. There may be little consensus about how theory is to be constructed, but there is unanimity concerning its use. Theory is intended to enter a dialogue with experience, stimulating and informing research: if it fails in doing this it is of no use to science, whatever its logical or aesthetic appeal. A typology is not the sort of construct to be evaluated or exhausted by a single research application, but it may be important to argue here that such applications are both possible and promising.

A set of ideal types could, in the first instance, prove a useful guide to organizational analysis of schools: components of the models suggest the coincidence or patterned absence of certain structural features. Further, a high potency for combination of the models provides us with a larger number of hybrid forms, to be employed in the investigation of particular schools or school systems. The parochial school of an earlier French-Canada was a familistic-religious hybrid, for example, while the emergent Community Colleges of Ontario appear to combine economic and collegial strains.

As Kaplan has noted:

A model is often worth knowing because of its family connections; if it is not capable of doing for us what is needed, it can introduce us to a relative who will be happy to oblige.¹⁹

A typology of this sort should be of use not only in respect of the schools themselves, but in relation to the ideological differences which the models presume to stylize and integrate.

Residual structural elements may prove clues to the earlier forms of school structures. Certainly, one possible avenue for social-historical investigation of schools and their dynamics of change might well be through such models as are linked to the evolution of other institutions.

Conflict situations, too, could be approached through a typology: divergent groups may favour particular models which rationalize their interests, stance and tactics. The teacher, for example, may view himself as an expert, may be seen by the parent as another adult who holds children in trust, and by his employers as a civil servant. The dialogue of recent parent-teacher and teacher-board conflicts in Ontario suggests that

radically different perceptions of schools and school roles are at stake in such issues.

All of these suggested directions for research are promises which may or may not be kept: meaningful evaluation must await more concrete efforts at application. Theories, like balloons, are relatively easy to get aloft: the real trick is to get them back down to earth.

Selected References

- 1 Becker, H. Interpretive sociology and constructive typology. *Twentieth century sociology*, ed. G. Gurvitch and W. E. Moore. New York: The Philosophical Library, 1945, 84.
- 2 McKinney, J. C. Constructive typology: Explication of a procedure. Constructive typology: Structure and function. *Introduction to social research*. Ed. J. T. Doby. New York: Appleton-Century-Crofts, 1967, chaps. 8, 9.
- 3 For related discussions of schools as "model" (i.e. small) societies, and some efforts at functional typologies, see particularly: Grannis, J. C. The school as a model of society, *Bulletin of the Harvard Graduate School of Education*. Fall, 1967; Nelson, J. L. & Besag, F. *Sociological perspectives in education: Models for analysis*, New York: Pitman Pub. Co., 1970.
- 4 Park, R. E. *Race and culture*. New York: Free Press of Glencoe, 1950, 316.
- 5 Monroe, P. *A text book in the history of education*. New York: The Macmillan Co., 1905, 394.
- 6 Calhoun, J. W. The state's case. *Saturday Review*, January 15, 1972.
- 7 Hughes, E. C. Race relations and the sociological imagination. *American Sociological Review*, 1963, 28, (6), 879-890.
- 8 Hollingshead, A. B. *Elmstown's youth*. New York: J. Wiley & Sons, 1949.
- 9 Carlton, R. A. The dilemma of bilingual education: Parallelism or integration. *Canada: A sociological profile*. Ed. W. E. Mann, Second Edition. Toronto: Copp Clark Co., 1971.
- 10 Page, C. H. Bureaucracy and higher education. *The Journal of General Education*, 1951, 5, 91-100.
- 11 Ward, L. F. *Dynâmic sociology*, 1883.
- 12 Monroe, P. *Op. cit.*
- 13 Floud, J. & Halsey, A. H. *Education, economy and society*. New York: The Free Press of Glencoe, 1961, 2.
- 14 The Government of Ontario. *The Public Schools Act*. Revised Statutes of Ontario, Chap. 330, 8(2). Toronto: The Queen's Printer, 1963.
- 15 Hughes, E. C. *Men and their work*. New York: Free Press of Glencoe, 1958.
- 16 Clark, S. D. Education and social change in Canada. *The developing Canadian community*. Ed. S. D. Clark. Toronto: University of Toronto Press, 1962, 200.
- 17 Hughes, E. C. *French Canada in transition*. Chicago: University of Chicago Press, 1943.
- 18 Goffman, E. *Asylums*. New York: Doubleday & Co., Inc., 1961.
- 19 A. Kaplan. *The conduct of enquiry*. San Francisco: Chandler Pub. Co., 1964, 274.

JOHN McLEISH

The University of Alberta

The Russian Sunday Schools— An Experiment in Voluntarism

Between 1859 and 1862 a mass movement was developed by members of the intellectual classes in Tsarist Russia to set up schools for literacy education, for workers in the cities and for peasants in the villages. Modelled on the idea of the English charity school (and influenced by the educational ideas of Count Leo Tolstoy) the schools rapidly became the centre of revolutionary and atheistic propaganda stemming from the various radical groups in the student and political movement. This article treats the Sunday School Movement from the standpoint of the various social groupings—their aspirations, educational theories and their position in the social hierarchy. Reasons for the failure of the enterprise are brought out. (Dr. J. McLeish is Professor of Educational Psychology at The University of Alberta.)

Social Background

The 'repentant nobles' known as the "Decembrists", (*Dekabristy*), because their attempted palace revolution took place on December 14, 1825, are significant in the history of Russian popular education mainly by virtue of their conception that a bridge must be built between the social *élite* and the peasant masses. They had no practical plans for the eradication of popular illiteracy and ignorance. But the theme of a social debt which the nobles and intellectuals owed to the people became the inspiration and motive force of most of the attempts to enlighten and liberate the serf and working population of the Empire throughout the nineteenth century. One section of the *Dekabristy* wanted the liberation of the serfs with land. They wanted a constitution and a republic. They wanted to impose social reforms on themselves and their class.¹ The ironical comment of Count Rostopchin (governor of Moscow in 1812) when told of the abortive *coup* sums up the anomalous situation of the revolutionaries:

Formerly revolutions were made by peasants who wanted to become gentlemen; now gentlemen try to make a revolution so as to become cobblers.²

The main significance of the *Dekabristy* was that they were the inspiration of the revolutionaries who came after. Hertzen, Ogaryov and Sazonov, who organized one of the earliest revolutionary circles, the Russian

Fourierists, counted themselves to be 'sons of the Decembrists'. It was an article by Ogaryov, a personal embodiment of the 'repentant noble' in the later revolutionary movement, which quite directly inspired the movement 'To the People' of 1873. And it was probably Hertzen, his friend and associate for many years, who suggested the innovation of Sunday schools for the illiterate, out of his considerable experience of English conditions. These two men, Hertzen and Ogaryov, co-operated for many years in expounding the notion that a class of revolutionaries must arise who would dedicate themselves to the people's cause.³

The Sunday schools were only one of a number of forms through which the revolutionary impulse expressed itself in 1859-1862. At this time the whole of Russian society was in revolutionary flux. The Crimean war had revealed the decadence and inefficiency of official Russia. There was a general economic crisis in serf agriculture. Persistent rumours of an Emancipation Decree operated to unsettle the peasant masses and to maintain them in a condition of anxious expectation. Their unease kept the bureaucracy in a condition of fearful apprehension. As a result, the anticipated freedom was withheld: this of course still further aggravated the unrest. A kind of chain reaction was set up through which the impotence and incapacity of the ruling circles were more and more exposed.

A useful index of the state of affairs is the number of peasant uprisings occurring throughout this period. According to the official figures there were 1,186 between 1826 and 1861. In fact, there were probably many more than this. The development of social unrest in the countryside is shown in the comparative table below.

Frequency of Peasant Revolts in the Russian Empire

1826-1834	148 uprisings
1835-1844	216 "
1845-1854	348 "
1855-1861	474 "

During the period following the Crimean War, official inquiry revealed that 210 of the last figure of 474 peasant uprisings resulted from premature rumours of the Emancipation Decree of 1861: 135 were caused by excessive landlord exactions of rents and work-payments; 30 were due to crop failures which gave rise to famine, this being aggravated by landlord exactions; 17 were caused by the forced removal of serfs from their native villages; 13 were due to reduction of the amount of peasant land holdings by unjust proprietors. On fourteen estates a Tsarist Commission of Inquiry discovered that peasant disturbances had continued over a period of from 10 to 40 years. Periodically major uprisings took place which involved whole regions. In a period of sixty years (1801-1861) 'agricultural production showed a stationary yield. This "crisis of production" was aggravated by the export of 'surplus' grain by the landlords, as well as by recurrent droughts and famines.⁴

Conditions in the towns were not much better. The intellectual classes, large sections of whom accepted the revolutionary views of Hertzen and Chernishevski, were in a mood for change. Under the conditions of the autocracy, novel ideas on the social question necessarily forced the in-

novator first into opposition and then, by a logic inherent in the Russian situation, into revolutionary activities. Any discussion of social questions which ventured outside the limits of Orthodoxy, Autocracy and *Narodnost* ("nationalness" or "national characteristics"—which meant the established order of serfdom, patriarchalism and obedience),⁵ was the subject of police action.

The Student Movement and the Sunday Schools

The students of the fifties were under the influence of liberals such as P. V. Pavlov and N. I. Pirogov. There was a more revolutionary wing oriented towards Chernishevski's "Contemporary" (*Souremennik*) and Hertzen's *émigré* London circle.⁶ Although industry had achieved a substantial growth after Peter, it was deeply affected by the feudal relationships inherent in the serf economy. There was no independent working-class movement until the '70's. Nor did the town proletariat participate in the revolutionary movement, except insofar as many town workers retained ties with their villages and were thus affected by the peasant discontent.

In these conditions, the notion of creating a literate population through voluntary Sunday schools seemed to spring up simultaneously in different parts of Russia. Considerable controversy exists on the question who was the pioneer of this idea.⁷ According to the Tsarist secret police archives, a group probably in the best position to know, the Kiev Professor P. V. Pavlov was responsible.⁸ The idea was probably suggested to him by Hertzen and Ogaryov in the course of his visit to England. Pavlov organized a student circle in Kiev. But the real moving spirits were the students Bekman and Muravski. Other members were the students Slepyskin, Chaly, Voronov, Levchenko, Portugalov, Zavadski and Yefimenko. The idea of the Sunday school was conceived by this group in 1858. They thought of it as a means by which revolutionary ideas could be conveyed to the people. The students travelled around and carried the idea of the Sunday school to many other towns, especially to those in which there was a university and a student movement. Letters from Levchenko to Pavlov and Bekman, found in the archives of the secret police, testify to the fact that Bekman, Yefimenko and Portugalov visited dozens of places including Moscow, Petersburg, Kharkov, Kiev and Kazan, spreading the revolutionary ideas of the Kharkov-Kiev circle (as it came to be called). Yefimenko established a *Society for the Dissemination of Literacy and Useful Knowledge*. This society organized artisan schools in Perm and Yekaterinburg. It also proposed to organize literary gatherings, to publish lectures and a newspaper which would be the organ of the Sunday schools.⁹

The Petersburg group, centred around Professor Miller and Baron Kosminski, included such students as Ostrogorski, Glinski, Semyevski, Semyonov and others. This student group has also been nominated as founder of the Russian Sunday school.¹⁰ The Petersburg city council had discussed the idea of organizing Sunday schools for the artisan class in 1858. Their interest can be defined in the terms of the view expressed in the council that 'the absence of all education is the cause of the unsatisfactory condition of our artisan production and our dependence on foreigners'.¹¹ This clearly-expressed motive of enlightened self-interest

is, of course, the second strand in the movement for Sunday schools, the first being the revolutionary aspirations of the intelligentsia. The liberal-capitalist influence was exercised by a small group who were affected by ideas stemming from the Scottish and English traditions represented by Adam Smith and John Stuart Mill. These, and other liberal thinkers, had ardent supporters in nineteenth century Russia: their views on the need for popular education as the basis of a modern, industrial state were well known.

Although both had toyed with the idea of literacy schools, neither the Council of Ministers nor the Petersburg city council did anything effective in the matter. They helped to make the idea of Sunday schools widely known and, in the beginning at least, respectable. It was the student group, especially Ostrogorski and Glinski, who set up the free *Taurichevski* people's school in Petersburg. Throughout their brief existence the Sunday schools remained completely voluntary, both in their establishment and upkeep. The only official action taken was to seek to hamper the work of education by establishing onerous conditions and permeating the organization with police spies.

In view of the widespread interest which quickly developed it seems a trifle academic to try to decide who set up the first school. As we have seen, the honour is claimed for two groups: the names of Muravski, Bekman, Ostrogorski, Glinski, Shpilevski and Vorony are prominent. What is certain is that the first Sunday schools opened in April, 1859, and that the moving spirits belonged not to a single faction but were drawn from different social groups. They held as their common ideal the belief that social evils must be combatted by a socially aware and responsible section of the community. If necessary they were prepared to work in the face of the opposition of the ruling powers. Their leaders belonged either to the revolutionary circles inspired by the ideals of Hertzen and Chernishevski or they were liberals influenced by Western ideas of constitutional government.

The first Sunday school was the signal for a mass social-political movement for the dissemination of knowledge. According to Ol'khin, secretary of the Petersburg council of Sunday schools,¹² it was an all-Russian event of great social significance. Whichever section of the intelligentsia, the liberal tendency or those who supported the programme of peasant socialism ('the democratic enlighteners'), took the first step, it is certain that the movement for popular enlightenment was affected very quickly by the economic demands and political programmes of the revolutionary groups. The revolutionary democrats were soon at the centre of affairs, exercising the predominant influence.

Between the end of the Crimean War (1856) and the *Manifesto of Liberation* (1861) there were many secret, illegal, and potentially revolutionary groups in Russia. These circles were in touch with each other through certain key figures, they worked out a common core of ideas, aspirations and techniques. Groups sprang up, flourished for a time and then disappeared without trace. Individuals constituted a link, programmes and policies were the basis of an established tradition. One of the earliest of these was a group of Moscow students, the *Vertepniki* or "cavemen".¹³

They were inspired by the ideals of the Russian folk-lorist P. N. Rybnikov; they met regularly with other young men, army officers and office workers, to discuss the burning questions of socialism, republicanism, and the social life of the Russian village. They were strongly moved by the desire to draw near to the people. They aspired to become the instrument which would link the intellectual classes to the peasantry. The circle began to discuss and prepare for an approach to the people in 1855. It was at this point in their deliberations that Rybnikov arrived in Moscow as a student. The group, which he joined, belonged to the lower social classes: several of its members were linked in sympathy with certain groups of religious schismatics, groups which were persecuted and outlawed by Church and State and which at certain periods seemed to be fertile soil for revolutionary ideas. According to a secret police report of 1858 the group consisted entirely of ardent republicans in contact with a conspiratorial group in the University of Kharkov.¹⁴ The latter circle discussed the methods of political struggle against the Autocracy: a plan was made to organize and indoctrinate the peasant masses with revolutionary ideas.

The circle had been formed immediately after the Crimean war by Bekman and Muravski from Kiev, both university students and members of the lower nobility. The defeat of Russia had been the main reason for setting up this conspiracy. They believed that a complete and radical overturn of Russian society was the only possible way to redeem the past and to ensure a brighter future. With two others, Yefimenko and Zavadski, members of the *raznochintsy* ('those outside the official ranks') they established a nucleus and started to recruit members to the conspiracy. By the end of 1856 there were eight members. At this point the group coalesced with another student Kharkov group, the *Paskvilny Komitet* or 'committee of slanderers'. This consisted of five students, all drawn from the richer nobility. The group was animated by the ideals of Bazarov, the nihilist in Turgenyev's *Fathers and Children* (written in 1862). They showed a supercilious attitude towards all traditional customs and ways of thinking: like Bazarov they combined this hostility with a single-minded interest in 'exact science'. This circle had one single, clear aim and purpose—total revolution, this to begin with the emancipation of the serfs.

This objective did not seem very difficult to achieve . . . We believed that Russia would arise that very year. All we needed to do was publish a few thousand copies of some sort of manifesto and send our agents everywhere with it. If these plans were carried out we expected that one fine morning people would waken up to find a bloody revolution had broken out all over Russia.¹⁵

This student romanticism had a certain basis in the general discontent of all classes with the Tsarist government. A widespread notion existed that a peasant revolution was just around the corner: many people believed that this would occur spontaneously. But Bekman, Muravski and the Kharkov circle believed that a necessary condition for successful revolution was the dissemination of revolutionary ideas by means of the printed word. This notion immediately involved them in a consideration of mass illiteracy and the means of overcoming it.

The two student groups which had thus coalesced did so on the basis of a common source of ideas and programmes—the publications of Herten

and his *Free Russian Press* in London. Under the influence of the London *émigrés* they developed a republican programme: they had plans for the subversion of the Kiev garrison and for propaganda in the villages. But in reality, the only activity in which they achieved any success was the distribution of a satirical manifesto about the unfavourable outcome of the war in the Crimea.

The liberalizing tendencies of the government and the growing realization of the actual difficulties of preparing a revolution caused the disruption of the group. According to Zavadski, their activities degenerated into gossip. The society was saved from total disintegration only by the link which Bekman and Muravski managed to establish in 1858 with the Kiev circle of students, organized around the progressive historian Professor V. P. Pavlov.

Pavlov was a well-known liberal, the centre of discussion and progressive opinion in Kiev. The general atmosphere of Russian university life under the Tsars is well-conveyed in his anecdote (which refers to 1847). The Chancellor of the university, a certain Governor-General Bibikov, in his inaugural address told the assembled Senate and students:

Professors! You are free to meet amongst yourselves, but only to play cards. Students! Remember that I will turn an indulgent eye on dissipation. But a soldier's uniform is ready for anybody who indulges in freethinking.¹⁶

In fact, Professor Pavlov did not take this injunction to heart. He was exiled in 1862 for his outspokenness against the government, his work in the social movement and because he was an adherent of Hertzen (as indeed was everybody of any significance in the student movement of the 'fifties). Professor Pirogov, another Kiev liberal, also supported the students in the organization of the Sunday school movement.¹⁷ Neither of the professors was prepared to go as far as the revolutionary students of the secret society. In fact, they finally lost the trust of the student body because of what seemed to be their temporizing with the authorities. But at this stage, when Autocracy itself was in a liberalizing mood, they added to the official concessions of greater freedom of discussion and organization given to university students: they encouraged news-sheets, discussion groups, savings banks, and other student activities.

Organization of the Sunday Schools

The actual organizers of the Sunday schools in Kiev and other cities were the itinerant students Bekman, Muravski, Yefimenko, Portugalov and Zavadski.¹⁸ Their preferred method of operation was to set up revolutionary circles as centres of a looser organization, involving fringe sympathizers not committed to republicanism nor to conspiratorial methods. In Kazan and Perm for example there were circles of helpers and sympathizers to the number of more than 150. In Kazan the well-known Professor Shchapov worked with Portugalov of the original Kharkov circle, and with Krasnoperov, Krasovski and Manasein. This group organized schools and canvassed the idea of a society for literacy-teaching and the establishment of a peasant library. Shchapov was originally a Siberian peasant who had ecclesiastical connections: by tremendous intellectual efforts he raised himself to the dignity of a professorship at the university of Kazan.¹⁹ In

his inaugural lecture as professor of history he declared himself an opponent of the official view of Russian history, expressing his sympathy with the *Raskolniks* (Schismatics) and other marginal groups in the Empire. In 1862, he glorified the work of the schismatic sects and expressed the ideals which claimed his support for the Sunday schools:

While Peter built schools only for the clergy and aristocracy, the *Raskolniks* everywhere established a living school for the Russian masses—peasants, artisans, merchants and soldiers. The *Raskol* took up the task of disseminating education amongst the people. And it chose the most natural and direct method of doing this, namely, by sending preachers and missionaries to all regions, to the towns and villages. These teachers of the people spread the knowledge of the alphabet and of their doctrine much more successfully than did the official schoolmasters.²⁰

Shchapov had direct relations with Hertzen, propagandist of peasant socialism and republicanism. The official view of his book on the schismatics was that it represented 'authentic communism' and that Shchapov was only using the ideas of the *Raskolniks* as a lever with which to produce a new *Pugachovshchina* or peasant jacquerie.

The Sunday schools in Perm were organized by a different circle which consisted of former seminarists and students. They were directed by Yefimenko, a member of the original circle. He gave the enterprise the orientation towards the complete political renovation of the country. The circles in Kiev, Kharkov, Perm, Ufa and Orenburg used every means possible to involve people. Musical evenings, public readings, lectures, collections for the schools, and other events were made the occasion for more or less disguised propaganda, not only for the schools but for the political aims of the movement.²¹

In Moscow, the Sunday schools were organized by the circle of Zaichnevski and Argiropulo. This circle became famous under the title of *Young Russia*.²² Zaichnevski was the leader. He was a revolutionary socialist, powerfully influenced in his political development by the writings of Hertzen. He arrived at Moscow University to study mathematics in 1859. But his major interest was propaganda. He devoted his time to expounding the ideas of Western Socialism to his student contemporaries and organizing a revolutionary movement. The political atmosphere of this time can be gauged from the fact that when he lithographed a pamphlet by Ogaryov on the Decembrist conspiracy (a refutation of the official account) he sold three hundred copies in one day. His first supporters were students from the Kazan region. Amongst them was his closest associate, Perikles Argiropulo, a student of Greek origin. Thirteen members of the circle took part in the work of the Moscow Sunday schools, as well as in places far from Moscow. For example, in the summer of 1861 several members travelled from Moscow to the Tulskaia, Ryazanskaya, Orlovskaya provinces and to the Ukraine, to carry on revolutionary propaganda and to teach in the Sunday schools. These included the students Prootzev, Pokrovski, Ponyatovski and Zaichnevski. Shevchenko, the Ukrainian dramatist, also participated in the work of this circle. One of his last literary productions was a *South Russian Spelling Book* for the Sunday schools. This was a collection of popular Ukrainian and Russian proverbs chosen for their social significance.²³

In May 1861 Zaichnevski left Moscow on horseback in the direction of his home town Oryol. It was a period of great unrest in the countryside, following the decree of emancipation of February 19, 1861. Zaichnevski decided that the time for action had come. He therefore went about inciting the peasants, preaching socialism and the need for revolt everywhere, without attempting any concealment. He entrusted his conspiratorial letters to the ordinary post. He proclaimed that the peasants themselves must act: they must march on the towns and seize everything needed for success, above all arms and money. His father and friends urged him to moderate his opinions and to refrain from such open propaganda. Zaichnevski would not listen. He behaved like a man insane, or a person intoxicated by the imminent appearance of the millennium. Alexander the Second, an inveterate note-writer on the margins of revolutionary materials sent him by the Third Section, observed on an intercepted letter from Zaichnevski to Argyropoulos that it was 'so criminal and dangerous that I consider it necessary to arrest them immediately and bring them to me with all their papers'. This in fact was done: unfortunately no record remains of the confrontation. The two students were taken back to Moscow. In prison, with the assistance of their many visitors and a well-disposed guard, they composed the revolutionary manifesto *Young Russia*. This is a violent document, having much in common with the *Communist Manifesto* of Marx and Engels, especially as far as the specific reforms proposed are concerned. It calls for:

a revolution, bloody and pitiless, one which will change everything to the roots, which will overthrow completely the foundations of present-day society and effect the ruin of all who support the existing regime . . . Rivers of blood must flow, even innocent people will probably perish.²⁵

The manifesto attacked Hertzén for allegedly temporizing with the forces of reaction. What is probably the most objective comment on the document was made by Bakunin (recently escaped from Siberian exile and arrived in London after travelling half-way across the world):

They shout and decide questions as if the whole nation were behind them. But the people are still on the other side of the abyss. Not only do they not want to listen to us, they are ready to knock us down at the first sign from the Tsar . . . The authors of *Young Russia* are so little used to real action that they move in a world of abstractions.²⁶

The manifesto was used in the Sunday schools.²⁷ Although severely criticized for its revolutionary romanticism and Jacobinism, it had a wide distribution and considerable support in some of the student circles.

An interesting critical comment was found by the police amongst the papers of Peter Ballod, a student who organized a small printing press for the publication of clandestine leaflets. He had written:

We are revolutionaries. But this does not mean men who make revolutions, but rather men who love the people so much that they do not abandon them when they throw themselves, without any urging from us, into battle. We implore the public to assist us in reducing the severity of the revolution now being prepared by the people. In our pity for the educated classes, we implore them not to under-estimate the danger which threatens.²⁸

Ballod was a member of the revolutionary group *Zemlya i Volya* (Land

and Liberty) and his conception of the revolution was opposed to that of Zaichnevski. Most of the other circles agreed with Ballo in criticizing the immaturity, not to say the political infantilism of *Young Russia*.

Argiropulo died in prison in Moscow from jail-fever. Zaichnevski was exiled, but continued to carry on his revolutionary activities until he died in 1896.

The History of the Sunday Schools

Sunday schools started in Saint Petersburg, the capital, at about this time. They contained the same heterogeneous groups as elsewhere. The leadership and drive were supplied by circles of revolutionaries and social reformers associated more or less loosely around Chernishevski and his periodical *Souremennik* ('The Contemporary').²⁹

There has been considerable discussion, even controversy, on the question whether Chernishevski was directly involved in conspiratorial activities. It was believed for many decades that he was the victim of a police conspiracy. In view of the nature of the Tsarist regime and its penalizing of expressed opinions, it seemed for a long time to be a legalistic question whether he actually took steps to *organize* conspiracy in a formal way. The fact was that he represented the most outspoken publicist against the regime, and that up to his arrest he was the inspiration and spokesman of the active student revolutionaries.

It is clear from *Souremennik* that Chernishevski was passionately interested in the extension of the Sunday school movement. He welcomed it as the first step ever taken in Russia towards binding the people to civilization and science.³⁰ An illiterate peasantry and town proletariat must remain for ever outside the sphere of political activity and scientific progress: in Chernishevski's eyes, something less than human. According to materials recently published from Tsarist archives, there *was* a direct connection between Chernishevski and the revolutionary movement.³¹ It was alleged at the trial that he had written a manifesto to the peasants to be published and distributed by Mikhailov and Shelgunov. It now seems plain from the archive materials, that Chernishevski was pushed, rather unwillingly, into organizing the secret society which came to be known as *Zemlya i Volya* (Land and Liberty).

The central 'five' of the conspiracy consisted of Putyata, Sleptsov, Serno-Solovevich, Obruchev and Chernishevski. Three members of an inner circle—Averkiev, Blyumer and Gaideburov—were directly involved in the Sunday school movement. At one stage the Saint Petersburg group contemplated the publication of a *Vestnik Voskresnikh Shkol* (Messenger of the Sunday schools) under Chernishevski's supervision. When Averkiev was arrested in 1861 various papers in his possession seemed to indicate that *Zemlya i Volya* was already in existence, that Chernishevski was a leading organizer, that the society used the Sunday schools as an organ of revolutionary propaganda, that the educational 'centre' had been set up in Saint Petersburg in the summer of 1860, that each school sent a delegate to the legal council of the open Sunday school society, and that a secret political organization existed which exercised an ideological leadership of the Sunday schools through Chernishevski's associates on the educational

council. These associates were named as Averkiev, Rymarenko, Platon Pavlov, Pogosski and others.

From August 8, 1860 the legal council of the Sunday schools met regularly, twice a week. It is clear from the short protocols of these meetings that Pavlov was responsible for actually directing the Sunday schools. Pavlov, Pogosski and Ol'khin, three of the group who were under Hertzen's and Chernishevski's influence, were respectively chairman, treasurer and secretary of the Sunday school movement in Saint Petersburg.³² The activities in the capital were those already instanced: literacy teaching, evening readings, lectures and social activities. In the course of this legal activity various sections of the community were exposed to carefully modulated propaganda for social change.

The activities of the council also went beyond the confines of the capital. Links were established with the movement in the provinces: it was intended that the journal *Vestnik Voskresnikh Shkol* should become an all-Russian publication, linking the schools together.

The Liberal-Democratic Influence

The revolutionary groups were not left unchallenged in their operation of the Sunday schools. From the beginning there were at least two tendencies struggling for leadership of the movement. This is reflected in the personnel as well as in the syllabuses of different groups. The liberal-democratic idea of the schools was expressed by Professor K. D. Ushinski, the well-known educationist, in his 'Letter to the Provinces' published in the *Journal of the Ministry of Popular Enlightenment*. He suggested that the aim of the Sunday school should be to 'awaken the mental capacities of the students towards self-activity'. This activity would not only enrich their personalities but would work so as to strengthen their Christian and moral sentiments. The second task of the schools, according to Ushinski, should be to prepare the students for practical productive activity. The different subjects should be so chosen and provided as to lay the basis for craftsmanship. Conversations in the Sunday schools should be centred around important events in the history of Christianity and crucial events in Russian religious history. Some consideration should also be given to physical phenomena, to various animal species, and some theorems in geometry could lay the basis for an acquaintance with different handicrafts and important technical inventions. Students should be familiar with models of the hydraulic press, of the steam engine, of mills and so on.³³

In the context of Tsarism this programme was progressive and far in advance of official thinking. It may be taken as representing the views of the small landowners who tended to be liberal in politics. It also clearly expressed the needs of the developing class of industrialists and commercial entrepreneurs whose activities were constantly being stifled within the confines of the semi-feudal society of serfdom. The interests of the largest landlords and serf-owners were dominant in the state. Their hidden extortions, in the form of quit-rents extracted from the families of commuting peasant-workers, acted as a stranglehold on industrial development.³⁴ Their political influence tied both the entrepreneur and the

worker to mediaeval conditions in social, cultural and educational matters. Even Ushinski's moderate and traditional curriculum appeared as a threat to these interests. The fact was that *any* independent action, no matter how restricted, and no matter by whom contemplated, was perceived as a threat to the existing order. This was expressed clearly by Prince V. A. Dolgorukov, the chief of the Third Section:

The government cannot permit a situation to exist whereby half the population owes its education not to the State but to itself or to the private beneficence of a particular class of people.³⁵

The liberals spent their lives in a state of uneasy compromise. They became an object of consideration when it seemed to the Tsar and his advisers that concessions must be made for fear of a worse fate. But they were liable to the same persecution and punishment as the most violent revolutionaries whenever the political situation allowed of it.

As against Ushinski, the revolutionary Populists saw the Sunday schools, and literacy itself, as a means to an end, namely, the development of 'class consciousness' and a revolutionary spirit. They were interested primarily in the reformation of society. In a number of articles the *Souremennik* asserted in the Aesopian language imposed by the censorship that the concern of the schools must be not only literacy but the combating of religion, the struggle against the Autocracy and its reactionary ideology, and the development of scientific knowledge amongst the masses of the people. Teachers should not ignore life but adapt themselves to it in their class teaching. By so doing they could act on the consciousness of their students and change them. In spite of the circumlocutions the message was clear. This was that teachers should propagate directly the programme of the revolutionary circles.³⁶

The existence of an open struggle between the liberals and the revolutionaries in the schools is attested to by Prince D. D. Obolenski. He was a teacher for a short time in the school in the Prokhorovski factory in Saint Petersburg. The struggle manifested itself in disagreement over class-readings from illegal books (against serfdom and the government) and about the desirability of giving such books to students. This practice was indulged in by some teachers, but was violently opposed by others. Obolenski in his *Memoirs* says that readings from 'Uncle Tom's Cabin' (and its Ukrainian equivalent the tales of Marko Vovchok) were extremely popular with the worker-students. Prince Obolenski, the Moscow Professor, N. S. Tikhonravov and several others abandoned work in the schools because they could not stomach the political activities of some of the teachers whose 'ideas could only set the simple people against the proprietors, serfs against their gentry'.³⁷ The liberals preached the spirit of moderation and love of humanity in the schools. On the other hand, N. G. Pomyalovski, 'a master of anti-religious tales', was extremely popular as a teacher in the Schlussemburg district school in Saint Petersburg. Pomyalovski was a regular contributor to the *Souremennik* at this period. He participated in the widespread anti-religious, revolutionary and socialist propaganda.³⁸

The Tsarist Theory of Education and Society

The government also had a plan for the schools. Dolgorukov outlined this in a report to the Tsar on December 18, 1860. He recognized that the situation was very explosive, and that to close the schools directly would be dangerous. But it seemed equally dangerous to leave them in the control of the disaffected elements. Dolgorukov therefore recommended that the schools should be converted into government institutions and their programmes limited to the teaching of reading, counting, and the laws of God. Money donated voluntarily for the schools should become the property of trustees. The plan looked forward to the gradual closing-down of all the schools.³⁹

These intentions derived from a particular view of humanity, of the social order, and of the needs of the State. The Tsar and his advisers were not only defending their material interests and specially favoured position. In their own eyes they were doing something much more important. They conceived their task to be to prevent the dissolution of society itself into a jungle where justice would perish, where self-interest would reign unchecked, and where men would give way to every evil influence. These conclusions were the outcome of a long chain of deductive reasoning which established the absolute necessity for orthodoxy in religious beliefs, with persecution of all dissent; autocracy in government, with the destruction of all opposition by force; and *narodnost*, which entailed a rejection of *any* cultural borrowings from other nations, believed to be necessarily of an inferior type.

According to the official view, every nation-state, except Russia, had forfeited its integrity in every aspect of life. Innovation was the path which others had followed and which must be avoided at all costs. Innovations either in religion or in government, "reforms", could not be tolerated: the parlous condition of European countries which had "gone in" for reform was plain for all to see. To the conservatives, all Western institutions were radically bad. Parliamentary government, trial by jury, freedom of the press, secular education—all were based on the same lie, namely, the equality of man. In this system of thought, ignorance and superstition were categorically stated to be infinitely superior to knowledge and science. They represented the natural force of inertia by means of which humanity was kept to the path of its divinely-established Destiny, as a ship is steadied by its ballast. To "civilize" the nation by educating the illiterate, superstitious, poverty-ridden and uncultured peasant, would be virtually to destroy society. Freedom of conscience, which implies the right of criticism, would inevitably lead to criticism of the Autocrat, the divinely-anointed foundation of the whole social and religious structure. Such a breach in their faith could lead the whole of society only to the abyss. It is written by a leading Tsarist councillor:

An old institution is so much more precious, and hence irreplaceable, because it has not been thought out by anyone but created by life itself. It has come into being out of history and is sanctioned in the opinion of the people by that authority which alone history can give. Nothing is capable of replacing this authority, its roots lie deep in that part of our being where the moral ties are most tightly bound and most deeply rooted. Hence, no new idea can

be grafted onto the masses. The mass of the people assimilates an idea only through those emotions which arise, and which find their roots, in no other manner than through history.⁴⁰

To the conservatives of the Tsar's court and administration old superstitions and customs, especially if rooted in Orthodox religious culture, should never be criticized, no matter how grotesque they might appear to an educated man. Ancient customs and long-established beliefs must contain some precious grain of truth. The continued existence of serfdom and illiteracy is proof that they have been sanctioned by history, another name for God.

Thus the plan to destroy the Sunday schools was not based on expediency and the need to suppress revolutionary ideas which happened to be temporarily unpopular. It was the fruit of a developed policy based on the unshakeable conviction that all actions taken in support of the ruling power had Divine authority and sanction. Quite apart from the fact that the Sunday schools were hotbeds of revolutionary opinion, the idea even of a limited popular education was antipathetic to the ruling group.

Government Policy in Relation to the Schools

In accordance with Dolgorukov's plan the Minister of Popular Enlightenment E. P. Kovalevski issued a circular on December 30, 1860. Any teaching other than reading, writing, elementary drawing and design, and the Laws of God, was absolutely prohibited. In particular, teaching contrary to 'religious truth, government control and the truth of morality' was forbidden. To ensure that these instructions were carried out, control of the schools was placed in the hands of the State district Inspector of schools. A system of regular inspection by secret police was instituted.⁴¹ This was in addition to the routine infiltration by police spies, a procedure adopted with any new social organization under Tsarism.

The Council of Ministers, with the authority of Tsar Alexander the Second, issued another circular on January 5, 1861. This approved the earlier circular and went on to assume full direction and control of the schools. Priests were stationed in every classroom to ensure that nothing was said 'contrary to the truths of the Orthodox faith and the foundations of morality'. On the basis of these two circulars *Rules for the Sunday schools* were published in February, 1861 by the curators of the Moscow and Saint Petersburg school circuits.⁴¹

These official moves split the Sunday school movement. The liberals withdrew from the schools and from fund-raising activities. As a result the schools were soon in great difficulties. The official press hailed this breakdown as demonstrating they had been right all along in suggesting that the popular masses were not ripe for education.

On February 19, 1861 the long-awaited manifesto liberating the serfs was published. Liberal opposition to Tsarism crumbled in face of this recognition of their demands. While they were satisfied with the progress of their cause, the revolutionary movement, the peasant movement, and the student circles did not take this view at all. On the contrary Chernishevski indicated his opinion of 'liberation' by making no single mention of the

Decree in the *Souremennik*. When the provisions regarding compensation of the owners of serfs were made clear there were numerous peasant disturbances. These took the form of riots, uprisings, jacqueries, murder of proprietors. There was a general administrative breakdown in the countryside. Following the Decree, in 1861 there were 279 outbreaks, many of these being on such a scale that they revived memories of Pugachov. For example, the Bezdna disturbance involved over five thousand peasants and two hundred and thirty soldiers. The outcome was fifty-one dead and seventy-seven wounded.⁴³ In a number of cases, as in Bezdna, the commotion was directly due to the fact that the illiterate peasants had accepted the views expounded as a translation of the legal terminology of the Decree by a person who was at best semi-literate. The village priest, on whom the responsibility of reading and explaining the Decree fell, was often himself illiterate.

In fact, the feudal relations of *obrok* (quit-rent) and *barshchina* (forced labour) remained in force. Indeed, the peasants' obligations became more burdensome. The landlords were not only compensated in full for the land (which was handed over to the peasants at highly inflated prices). In addition, the peasant had to pay an indemnity to the landlord for being granted his freedom. Twenty million serfs emerged from Emancipation with their personal freedom established, and this was a great step forward. But they were impoverished and indebted by mortgage for the rest of their lives.⁴⁴

Chernishevski had predicted, on the basis of the rescript of November 20, 1857, that 'nothing but abomination would result' from the Tsarist emancipation. He lived to see his prophecy realized. His *Letters without an Address* (a series of open letters on the results of Emancipation) were absolutely forbidden publication by the censorship.⁴⁵ Shortly afterwards he himself was arrested (July 7, 1862), to be convicted of criminal conspiracy.

Following the *Manifesto of Liberation*, the persecution and isolation of the Sunday schools were intensified. The revolutionary wing, left to fight alone, adopted the tactics which had been proposed by Chernishevski as a counter to Governmental control. These were to continue literacy teaching in the schools under the eyes of the official observers, and to hold extra-mural political classes and conversations with students.⁴⁶ Ushakov, Krapivin and Khokhryakov were amongst those known to have adopted these methods. Student opinion was also mobilized to exert pressure on the Ministry to recall its circular. Pokrovski published a manifesto outlining a policy for the Moscow Sunday schools. He claimed the right to hold classes independently of the government and asserted the right to freedom of instruction for all teachers and students. He advised the students to seize the initiative and open new schools. In the journal *Otechestvenniye Zapiski* (Fatherland Sketches) V. N. Vodovozov wrote along similar lines, asserting the right of the schools to operate, free from government interference. He castigated the arrogant neglectful attitude of the intelligentsia to popular enlightenment in general.⁴⁷

According to Abramov, government interference and the restricted official programme caused a falling-off in the numbers attending the

schools.⁴⁸ This is now denied on the basis of scrutiny of the Tsarist archives after the Revolution. Modern authorities assert that, far from any falling off, the schools continued to flourish. The number of students as well as schools increased. On the basis of reports by the Minister of Education (Kovalevski), there were 76 Sunday schools at the beginning of 1861, this increased to 316 by the summer of 1862. The archives have also yielded up an unpublished article by Ol'khin, the secretary of the Saint Petersburg schools, which supports this conclusion.

From Kazan, Manasein reported that 'the ministerial circulars flow like water off a duck's back: students flock into the schools as at the beginning'. Revolutionary propaganda in the schools appeared to increase, instead of diminishing. In a letter of May 30, 1862, Valuyev, the Minister for Internal Affairs, wrote to the chief of police in Saint Petersburg:

In the Sunday school in the Vyborgski district (of Saint Petersburg) the following statements were heard: There is no God. Man has no such thing as an immortal soul. The State in general, and the Imperial Family in particular, are worthless. The Government should tax those whose creatures they are. All property should be held in common.⁴⁹

On June 1 he returned to the charge, writing that in the Samsonyevski and Vvedenski schools 'teaching is directed against religious truths, towards the dissemination of socialist ideas about property and against the Government'.

A secret commission of inquiry under Senator Zhdanov worked from June 3 until July 25 to produce a report on the Sunday schools for the Minister of Internal Affairs. This commission continued its work under the direction of Imperial Councillor Prince Galitzin until August 23 when their findings were presented to the Senate. The general tenor of the report (written in policeman's language) is that the revolutionary propaganda in the schools went on unabated.⁴⁹ For example, Khokhrykov brought pamphlets to his class in Samsonyevski including one entitled *Chto nuzhno narodu?* (What do the people need?). This was the work of Ogaryov and Obruchev: the answer they gave ('*Land and Liberty*') was adopted as its designation by the revolutionary society *Zemlya i Volya*. The proclamation *Young Russia* was also used in the schools. Krapivin, for example, explained its substance to the worker Mitrofanov, and wrote out the difficult words—'revolution', 'liberal', 'constitution', 'despotism', 'political laws'. Benevolenski read the pamphlet *What do the people need?* to two factory workers in his lodgings. Ushakov read articles from Hertzen's newspaper *Kolokol'* ("The Tocsin") to some Sunday school students in his room. He visited the worker Andreyev and handed him the proclamation *Young Russia*. The student Vargozov who also indulged in revolutionary propaganda in the schools, 'spoke audaciously against the Imperialist Government'.⁴⁹ These police reports indicate that it was not only revolutionary circles which were busy!

An interesting fact revealed by the commission was that worker-students themselves carried on propaganda and joined the revolutionary movement as a direct result of the Sunday schools. For example, the factory workers Mikhail Fedorov and Vassili Trifonov of the Samsonyevski, later of the Vvedenski school, were reported to be carrying on atheistic propaganda,

saying that the Tsar had done wrong to liberate the peasants without land, and asserting that the peasants had been deceived. Furthermore, they distributed the proclamation *Young Russia* amongst factory workers. 'Yakov Ivanovich' is reported by Shishko to have carried on propaganda in the Saint Petersburg Sunday schools. He was a weaver whose surname is unknown: according to other prisoners he behaved with extreme stoicism when interrogated by the Tsarist police. These tended to behave in an unrestrained way with lower class suspects.

The Sunday schools also penetrated the Army. The student Yakovlev was prosecuted for making revolutionary propaganda in the engineers' battallion. Also accused were Lieutenants Posnikov and Yelinski. In addition to Posnikov, among other members of the Saint Petersburg circle who appeared before the Galitzin commission, were Blyumer, Averkiev, Rymarenko, Pechatkin, Yelinski.⁵⁰ No direct evidence was obtained except in the case of Yakovlev: he was prepared for execution only to be told at the last minute that his sentence had been commuted to six years penal servitude. This was a common device used by the Tsar to intimidate his opponents. It may be recalled that Dostoyevski is said to have developed his nervous affliction, in 1849, as a result of the experience of being reprieved on the scaffold itself: his offence consisted in listening to an illegal reading of Belinski's letter to Gogol.

Closure of the Sunday Schools

It is clear on the basis of all this evidence that the Sunday schools were used by the *raznochinnaya intelligentsia* as centres of revolutionary propaganda. The teachers in the schools were in the main university students, army and naval officers, teachers in local authority schools. According to Shirinski-Shakhmatov, out of 2,318 directors and teachers,

- 1,266 were from education departments,
- 315 were university and gymnasium students,
- 184 were army and naval officers.⁵¹

In the course of giving instruction in reading and writing, illegal literature was used as class texts and distributed to the students. In particular, the proclamation *Young Russia*, the pamphlet *What do the people need?*, forbidden poems by Nekrassov, and various underground manifestos, articles from Herten's *Kolokol'*, atheistic and socialist writings of western authors, and much else of an inflammatory nature was read, discussed and circulated.

The decision to promote the education of the people was in itself a revolutionary step. This was clearly understood by those who co-operated in the work, as well as by the government. One or two members of the aristocracy assisted as teachers or subscribers, but the majority boycotted the schools. The main supporters were teachers, private individuals, ladies of the middle class, and university students. The schools were held in military barracks, factory premises, secondary school buildings, even in private houses. In some cases government buildings were used. In Saint Petersburg there were 28 schools involving nearly 4,500 students. These belonged to the lowest class—servants, apprentices, peasants, factory workers, dressmakers. Moscow had 20 schools. Many towns had four or

five. There was no large town in European Russia which did not have at least one school. To begin with, history, geography and science were taught, as well as reading and writing. This was later forbidden by the government who saw such teaching as a threat to the established order. In Moscow and Saint Petersburg reading rooms were set up. These were soon crowded with worker-students, and became centres of political agitation.

In May, 1862, fires broke out in Saint Petersburg, the commercial quarter being destroyed. These fires were probably the result of domestic accidents, fires being fairly common as houses in the capital were mostly made of wood. But due to the inflamed political situation, the fires were played up by certain sections of the conservative press as being allegedly the signal for revolution. The government and the Tsar believed such a revolution to be imminent. When it became clear that the lower classes, and society in general, still looked to the Tsar for guidance and not to the revolutionaries, the government decided the time for action had come.⁵² They began to round up known revolutionaries. The Sunday schools were closed altogether by Decree. According to the Minister of Education 316 schools catering for more than 30,000 students were swept away. In addition, 20 reading rooms were closed. Thus, by a stroke of the pen, an educational movement which embraced fifty towns and included many village communities was brought to an inglorious end.⁵³ The schools had been in existence for only three years. In that time they had involved large sections of the population in a variety of activities. They had brought together members of different social classes. The educated class had tried, by private initiative, to atone for official apathy, not to say opposition, towards the provision of facilities for popular education. It is true that the schools were used for the dissemination of revolutionary propaganda. But in total effect this was negligible. The threat to the Tsarist government did not come from the Sunday schools but lay in the widespread discontent with social conditions and with the intellectual and moral darkness which the Autocracy sought to maintain in the belief that this was an essential condition for civil order and the survival of religious truth.

In June, 1862, destruction of the schools actually commenced. Many teachers were arrested. Among them were the students Krapivin, Khokhryakov, Benevolenski; the workers Andreyev, Mitrofanov, Trifonov, Fedorov and Konechikov; the army officer Lieutenant Ushakov. They were charged, under Tsarist law, with specific offences. For example, Krapivin, a student at the Medico-Chirurgical Academy in Saint Petersburg was accused of 'reading forbidden publications to the simple people', agitating against the government, and directing the thoughts of the adult students to communist principles. Two other students from the same Academy, Khokhryakov and Benevolenski, were charged with reading the revolutionary manifestos (*What do the people need?* and *What must be done with the armed forces?*) as well as forbidden articles from Hertzen's *Kolokol*.⁵³

The cases were decided by the Senate in March, 1863. Benevolenski and Krapivin were sentenced to deprivation of all civil rights and exile to a distant part of Siberia. Khokhryakov was sent to prison labour in a fortress for five years. Ushakov, for carrying out revolutionary propaganda

amongst factory workers, reading them articles from the *Kolokol'*, and distributing copies of the manifesto *Young Russia*, was sentenced to civil "execution" and 40 years imprisonment. Mitrofanov was placed under police supervision for three years. Trifonov, Fedorov and Konechkov were each sentenced to 25 strokes of the birch and placed under police supervision for one year.⁵³

On June 1, 1862, the Samsonyevski and Vvedenski schools were closed down. A week later, by order of the Minister of War, all Sunday schools in the army were abolished. On the same day the Governor-General of Saint Petersburg issued a general order abolishing all special institutions for teaching the common people to read. A month later, on July 10, 1862, an Order in Council was promulgated banning all Sunday schools and reading rooms in the Empire.

References

- 1 Semevsky, V. I. (1909).
- 2 Venturi, F. (1952) p. 7 quotes the remark from Kizevetter, A.: *Istoricheskiye otklitki*, Moscow (1915) p. 100.
- 3 Hare, R. (1915) chaps. on Hertzen and the social movement; Venturi, F. (1952) vol. 1, ch. 1; Koyré, A. (1950) pp. 171-223; Carr, E. H. (1937) pp. 239-299; Carr, E. H. (1949).
- 4 Lyashchenko, P. N. (1956) ch. 20.
- 5 Uvarov's slogan summing up the ideals of the whole Tsarist epoch. cf. Masaryk, T. G. (1919).
- 6 Venturi, F. (1952) vol. 1, ch. 8.
- 7 Strunina, L. (1898) p. 3; Lemke, M. (1908), *Delo profesora Pavlova*; Stasov, V. and Stasova, N. V. (1909) pp. 93, 94; Abramov, Ya. D. (1908) p. 10; Zhurakovski, G. E. (1944); Pichkurenko, Ya. D. (1954); Glinski, B. (1913) p. 175.
- 8 Quoted by Pichkurenko, Ya. D. (1954) p. 96.
- 9 *Ibid.*; cf. Strunina, L. (1898) p. 3.
- 10 Ostrogorski, V. (1895) p. 121; Glinski, B. (1913) p. 175.
- 11 Pichkurenko, Ya. D. (1954) p. 96.
- 12 Ol'khin's article on the Sunday schools is quoted by Pichkurenko from secret archive materials of the Tsar's 'Third Section' (i.e. Secret Police) cf. Monas, S. (1961).
- 13 Venturi, F. (1952) vol. 1, ch. 9, especially pp. 386-387.
- 14 Koz'min, B. P. (1930).
- 15 Venturi, F. (1952) *ibid.*; Koz'min, B. P. (1930) pp. 43-44, 50-53.
- 16 Venturi, F. (1952) vol. 1, p. 366.
- 17 Pirogov, N. I. (1914) vol. 1, p. 634.
- 18 Pichkurenko, Ya. D. (1955) pp. 97-98; Lemke, M. (1908) pp. 313-317, 305.
- 19 Shchapov, A. P. (1906-1908) 3 vols.; Chernishev, E. (1951); Venturi, F. (1952) vol. 1, ch. 6, pp. 327-340.
- 20 Shchapov, A. P. (1906) vol. 1, p. 502.
- 21 Lemke, M. (1908) pp. 309-317; Pichkurenko, Ya. D. (1954) p. 99.
- 22 Venturi, F. (1952) vol. 1, pp. 469-496; Koz'min, B. P. (1932); Koz'min, B. P. (1930) p. 79.
- 23 Pichkurenko, Ya. D. (1954) p. 99.
- 24 Lemke, M. (1923) p. 3; Koz'min, B. P. (1943) vol. 1, p. 157.
- 25 Venturi, F. (1952) vol. 1, p. 481.

- 26 Bakunin, M. (1862) in Dragomanov, M. P. (1896) pp. 396-418.
- 27 Pichkurenko, Ya. D. (1955) pp. 109, 110, 114.
- 28 Koz'min, B. P. (1936).
- 29 Chernishevski, N. G. (1939—in progress).
- 30 *Souremennik* (1861) 85, p. 353.
- 31 *Vop. Istorii*, (1953) no. 7, p. 72; Venturi, F. (1952) vol. 1, pp. 286-296, vol. 1, pp. 286-287 (note); Nechkina, M. V. *Istoricheskiye Zapiski* 1941 no. X, pp. 3 ff; Lemke, M. (1923) pp. 161 ff; Alekseyeva, N. A. (1939) pp. 27, 321.
- 32 Pichkurenko, Ya. D. (1955) pp. 101-103.
- 33 Ushinski, K. D. (1948) vol. 2, pp. 501-505; Johnson, W. H. E. (1950) pp. 236 ff.
- 34 Lyashchenko, P. N. (1956) vol. 1, p. 329.
- 35 Venturi, F. (1952) vol. 1, p. 473.
- 36 *Souremennik*, 1860, 84, pp. 340-358; 1861, 89, pp. 6, 128 ff.
- 37 Obolenski, D. D. (1894) pp. 252-254; Tikhonravov, N. S. (1894) p. 33; Koz'min, B. P. (1923) vol. 1, p. 159.
- 38 Vodovozova, E. N. (1934) vol. ii, pp. 107-108.
- 39 Lemke, M. (1908) pp. 404-405.
- 40 Pobyedonostsyev, K. P. (1898, 1927); *ibid* in *Moskovski Sbornik*, quoted by Hecker, J. (1934) pp. 15-16, 42-48.
- 41 Pichkurenko, Ya. D. (1954) p. 106.
- 42 Dzhivilegov, A. K., Melgunov, S. P. and Picheta, B. I. (1911); Robinson, G. T. (1949) ch. 5; Zayonchkovski, P. A. (1954).
- 43 Dzhivilegov, A. K., Melgunov, S. P. and Picheta, B. I. *op. cit.*, vol. v, pp. 211 ff.
- 44 Lyashchenko, P. N. (1956) ch. 21; Venturi, F. (1952) vol. 1, ch. 7.
- 45 Chernishevski, N. G. (1939-51) Letters without an address: *Sochineniya*, vol. 16, pp. 123 ff.
- 46 Lemke, M. (1908) p. 294.
- 47 Vodovozov, V. N. *op. cit.* (1862, February) p. 518.
- 48 Abramov, Ya. V. (1900) p. 56; cf. Pichkurenko, Ya. D. (1954) pp. 108-109.
- 49 Pichkurenko, Ya. D. *op. cit.* pp. 109-110; Pankratova, A. M. (ed.) (1950) vol. ii, pp. 586, 587, 594.
- 50 *Ibid*. Pankratova, A. M. (1950) vol. ii, p. 460.
- 51 Shirinski-Shakhmatov, A. V.: *Voskresniye Shkoly v Rossii 1862 g.* pp. 26-31, 49, quoted by Pichkurenko, Ya. D. *op. cit.*
- 52 Kropotkin, P. (1899) gives a vivid description of the fires and the consequential reaction by the Tsarist government.
- 53 Pichkurenko, Ya. D. (1954) pp. 113-114; Lemke, M. (1908) p. 421; Pankratova, A. M. (1950) vol. 2, p. 599.

Bibliography

- Abramov, Ya. D. *Nashi voskresniye shkoly; ikh proshloye i nastoyashchiye*. Spb. 1900.
- Alekseyeva, N. A. (ed.). *Protsess N. G. Chernishevskogo; Arkhivnyeye dokumenty*. Saratov, 1939.
- Black, C. E. (ed.). *The transformation of Russian Society*. Harvard U. P., Cambridge, Mass., 1960.
- Breshko-Breshkovskaya, E. *Hidden springs of the Russian revolution: Personal memoirs*. London: Oxford U.P., 1931.
- Carr, E. H. *Michael Bakunin*. London: Macmillan, 1937.
- Carr, E. H. *The romantic exiles*. Penguin Books, 1949.

- Chernishev, E. Revolyutsioner-Demokrat A. P. Shchapov. *Voprosy Istorii*, 1951, no. 8.
- Chernishevski, N. G. *Polnoye sobranie sochinenii*. Moscow, 1939.
- Dobrolyubov, N. A. *Polnoye sobranie sochinenii*, Leningrad 1934-1939. 5 vols.
- Dobrolyubov, N. A. *Selected philosophical essays*. Moscow 1948.
- Dragomanov, M. P. (ed.). *Pisma M. A. Bakunina k A. I. Gertsenu i N. P. Ogaryova*. Geneva, 1896.
- Dzhivilegov, A. K., Melgunov, S. P., & Picheta, B. I. (eds). *Velikaya reforma*. Moscow, 1911, 5 vols.
- Glinski, B. B. *Revolyntsiionny period russkoi istorii (1861-1881 gg)*. Spb. 1913.
- Hans, N. *History of Russian educational policy, 1701-1917*. London, 1931.
- Hare, R. *Pioneers of Russian thought*. London: Oxford U.P., 1951.
- Haxthausen, A. F. G. M. *Studien über die inneren Zustände des Volkslebens, und insbesondere die ländlichen Einrichtungen Russlands*. Hanover, 1847-1852. 3 vols.
- Hertzen, A. *The Russian people and socialism. A letter to J. Michelet in 'My past and thoughts'*, vol. VI, 1927. London: Chatto & Windus, 1927, 210-248.
- Hertzen, A. *From the other shore; the Russian people and socialism* (intro. Isaiah Berlin). London, 1956.
- Johnson, W. H. E. *Russia's educational heritage*. Carnegie Inst. of Technology. Pittsburgh, 1950.
- Kaidanova-Bervy, O. *Public education in Russia since 1850*. Ann Arbor: Edwards, 1952.
- Kennan, G. *Siberia and the exile systems*. New York: Century, 1891, 2 vols.
- Kniazkov, S. A. & Serbov, N. I. *Ocherk istorii narodnogo obrazovaniya v Rossii do epokhi reforma Aleksandra II ogo*. Moscow, 1910.
- Koz'min, B. P. *Kharkovskiye zagovorshchiki 1856-1858 godov*. Kharkov, 1930.
- Koz'min, B. P. *Kruzhok Zaichnevskogo i Argiropulo. Katorga i Ssylka*, 1930, no. 7.
- Koz'min, B. P. P. G. *Zaichnevski i 'Molodaya Rossiya'*. Moscow, 1932.
- Koz'min, B. P. *Istorii 'Molodoy Rossii'*. *Katorga i Ssylka*, 1936, no. VI.
- Koz'min, B. P. (ed.). *Politicheskiye protsessy 60-kh godov*. 1943.
- Kovalevsky, M. M. *Russian political institutions; the growth and development of these institutions from the beginning of Russian history to the present time*. Chicago: University of Chicago Press, 1902.
- Koyré, A. *Etudes sur l'histoire de la pensée philosophique en Russie*. Paris: Libraire Vrin, 1950.
- Kropotkin, P. *Memoirs of a revolutionist*. London: Smith Elder & Co., 1899, 2 vols.
- Laserson, M. M. *The American impact on Russia: Diplomatic and ideological, 1784-1917*. New York: The Macmillan Co., 1950.
- Leary, D. B. *Education and autocracy in Russia*. New York, 1919.
- Lemke, M. *Ocherki osvobozhditel' nogo dvizheniya shestidesyatikh godov*. Moscow, 1908.
- Lemke, M. *Politicheskiye Protsessy v Rossii 1860—kh godov (po arkhivnym dokumentam)*. Moscow-Leningrad, 1923.
- Lenin, V. I. *The development of capitalism in Russia*. Moscow, 1957.
- L'Houet, A. *Zur Psychologie des Bauerntums*. 2nd ed., Tübingen, 1920.
- Lyashchenko, P. N. *Istoriya narodnogo khozyaistva SSSR*. 4th ed. Moscow, 1956, 2 vols.
- Masaryk, T. G. *The spirit of Russia*. London, 1919. 2 vols.
- Mavor, J. *An economic history of Russia*. New York, 1925. 2 vols.
- Medynski, W. N. *Istoriya russkoi pedagogiki*. Moscow, 1936.
- Meijer, J. M. *Knowledge and revolution*. Van Gorcum, Assen, 1955.
- Monas, S. *The third section: police and society in Russia under Nicholas I*. Harvard U.P., 1961.

- Noble, E. Russia and the Russians. Boston, 1901.
- Novikov, N. I. Izbraniye pedagogicheskiye sochineniya. Moscow, 1959.
- Obolenski, D. D. Nabroski iz vospominanii knyazya D. D. Obolenskogo. *Russki Arkhiv*, 1894, no. 10, pp. 252 ff.
- Ostrogorski, V. Iz istorii moego uchitel'stva. Spb. 1895.
- Owen, A. L. The Russian peasant movement 1906-1917. London: King, 1937.
- Pankratova, A. M. (ed.). Rabocheye dvizheniye v rossii v XIX veke: sbornik dokumentov i materialov. Moscow, 1950. 2 vols.
- Panteleyev, L. F. Iz vospominaniy proshlogo. Moscow-Leningrad, 1934.
- Pares, B. Russia and reform. New York, 1907.
- Pares, B. A history of Russia. London: Jonathon Cape, 3rd ed., 1955.
- Pichkurenko, Ya. D. Rabocheye dvizheniye v rossii v XIX vekye. Moscow, 1950.
- Pichkurenko, Ya. D. K voprosu o roli voskresnikh shkol v burzhuazno-demokraticheskoy osvobodivshisya Rossii v kontsy 50-kh nachalye 60-kh godov XIX v. *Sovetskaya Pedagogika*, 1954, 5, pp. 96-114.
- Pirogov, N. I. Sochineniya. Spb. 1914.
- Pobedonostev, K. P. Reflections of a Russian statesman. London: Richards, 1898.
- Pobedonostsev, K. P. L'autocratie Russe. Paris: Payot, 1927.
- Radishchev, A. N. Isbranniye sochineniya. Moscow, 1949.
- Raef, M. Russia after the emancipation. *Slavonic Review*, 1951, 29, 470-485.
- Ralston, W. R. S. The songs of the Russian people as illustrative of Slavonic mythology and Russian social life. London: Ellis, 1872.
- Reavey, G. The Russian thought pattern. *Slavonic Review*, 1948-1949, 27, pp. 450-468.
- Robinson, G. T. Rural Russia under the old regime. New York: Macmillan, 1949.
- Semevsky, V. I. Politicheskaya i obshchestvennaya idei dekabristov. Spb. 1909.
- Seton-Watson, H. The decline of imperial Russia, 1855-1914. London, 1952.
- Shapkarin, M. Krest'yanskoye dvizheniye v rossii v XIX—nachalye XX veka: sbornik dokumentov. Moscow, 1959.
- Shchapov, A. P. Sochineniya. Spb. 1906-1908, 3 vols.
- Smirnova, Z. S. The socio-political and philosophical views of V. G. Belinsky. Moscow, 1954.
- Stasov, V. & Stasova, N. Y. Vospominaniya i ocherki. Spb. 1909.
- Stepniak, (Kravchinski) S. M. The Russian peasantry. New York, 1926, 2 vols.
- Strunina, L. Pervyye voskresniye shkoly v Kieve. Kiev, 1898.
- Tikhonravov, N. S. Pamyati N. S. Tikhonravova. Spb.—Moscow, 1894.
- Tiltman, H. H. Peasant Europe. London, 1934.
- Tkachev, P. N. Izbrannyye Sochineniya na sotsial'no-politicheskiye temy. Moscow, vols. 1-4, 1922-1923; vols. 5-6, 1935-1937.
- Ushinski, K. D. Sochineniya. Moscow, 1948, 4 vols.
- Venturi, F. Il populismo russo. Firenze, 1952. 2 vols. (Eng. trans. by Francis Haskell, 1960.)
- Vinogradoff, P. Self-government in Russia. London: Constable, 1915.
- Vodovoza, E. N. Na zarye zhizni. Moscow, 1934.
- Wallace, D. M. Russia. London: Cassell, 1912.
- Zayonchkovski, P. A. Otmena krepostnogo prava v Rossii. Moscow, 1954.
- Zhurakovski, G. E. K voprosu o vozniknovenii pervykh voskresnikh shkol v Kieve. *Sovetskaya Pedagogika*, 1944, no. 10.

REVIEW ARTICLE

Educational Research in Britain: The N.F.E.R.

The distinctive feature of the National Foundation for Educational Research in England and Wales is that it is a research organization which serves the interests of the major teachers' associations, the local education authorities and the universities. This unique function (which it shares with the Scottish Council for Research in Education) is manifested in the constitution, in the corporate membership, in the large-scale and grass-roots character of the research undertaken, as well as in its publications.

Originating as a by-product of the justly-famous *International Examinations Inquiry* (Hartog and Rhodes, 1936) the N.F.E.R. has a number of national and international projects to its credit. To mention only a few of the national studies—there is the comparison of the Cuisenaire, Stern and Dienes methods of teaching arithmetic (Biggs, 1967), the teaching of French in primary schools (Stern, 1964), the effects of rewards and punishments in schools (Highfield, 1952), on streaming and its effects (Yates, 1966; Bouri, 1969). In the international field the N.F.E.R. co-operated in the comparative study of pupil achievement in the basic tool subjects and in a number of other enquiries. There are also more local and specialised inquiries, too numerous to mention.

As a major publisher of educational research reports, the National Foundation has long played a distinguished role. It has been an agency, sponsoring and guiding individual research workers, as well as disseminating and interpreting their findings to classroom teachers. Since 1958, the Foundation has published *Educational Research*, a journal which soon established itself as a model, reporting the latest results of current research in areas central to the interests of teachers.

In addition to listing, annotating and classifying thesis research in British Universities (Blackwell, 1959, 1963, 1969; Sanderson, 1970), the N.F.E.R. published an analytic "survey of salient research for those engaged in the practice of Education" (Thouless, 1969). This study, by R. H. Thouless, the doyen of educational psychology in Britain (the first to use analysis of variance on a psychological problem—that of "trance personalities") is a thorough, well-documented account of research in twenty major areas (learning, testing, backwardness, moral development, science teaching, foreign languages, creativity, etc.). The book must be praised for its systematic and comprehensive coverage of these major topics. In addition, it conveys the style, or "flavour", of British research very adequately. This can best be described as a distinctive concern with tracing ideas to their source, a refusal to be stampeded onto "band-wagons", a concern with methodology and relevance. Dr. Thouless hews to a conservative line. This is shown, for example, in his remarks on student evaluations:

There have also been a number of researches into the opinions of those in training courses as to the value of what they have been taught. It may be gratifying to those teaching in training courses that their students should think well of their efforts, but the important question is whether there is objective evidence that these efforts result in making the students into better teachers. While there is no reason for supposing that they do not, it would be satisfactory to have research directed towards getting better evidence on this matter. We also need more information as to what kind of training course (in length, in relative time given to instruction and to school practice, and in the choice of the subject matter of instruction—educational psychology, history of education, etc.) best contributes to the end of producing better teachers.

The weaknesses of this approach are exemplified in a more recent publication by the Foundation (Wilson, 1972). This is a rather humdrum collection of arguments by a philosopher, anxious to correct the misconceptions of the experimental psychologist—indeed eager to set up a kind of censorship board which should *control* and, in intractable cases, even veto the work of the scientist.

. . . Philosophy is not prostituted by being applied to practical research . . . the “scientific” tradition of research would be regenerated rather than corrupted by taking a philosopher on board . . . There must be a philosopher (or if the word is to be misunderstood, somebody whose expertise is with concepts, meaning and basic methodology) either in charge of the research, or at least able as a consultant to exert an overriding influence on it in its earliest stages. . . . There is no stage at which conceptual or methodological fallacies cannot creep in unobserved. (Wilson, 1972, pp. 53-55).

Following Plato, Wilson makes a distinction between *Education* and *education*. This means that educational research is not research in *Education* (unless supervised by a philosopher who directs the crude mechanics doing the donkey-work to consider the “Good” of the student). The distinction made between capital E *Education* and small e *education* is between the student as seen in the “eternal”? perspective of *the rational understanding* and the student perceived in the perspective of a person being educated for citizenship, or for leisure, or for a vocation, or for social status, or any other expedient function.

In other words, according to Wilson, educational research, as it is commonly pursued, is basically a trivial and irrelevant activity. It is erected on a foundation of conceptual misunderstandings which proliferate amongst the naive proponents of a scientific study of behaviour. Wilson documents his views by quotations from Piaget, Bloom and Kohlberg and from the topic areas of intelligence, prejudice, motivation, curriculum research and concept formation. It has to be said that most of his targets are sitting ducks as far as their confusions and contradictions are concerned. However, his diagnosis is at fault—it is not so much the language of the educational research workers which is bad as their conceptual systems. The prevailing vices of psychologists remain the same as in the pre-experimental era. These are *subjectivism* (hypothetical cognitive constructs), *dualism* (hypothetical mentalistic constructs), *isolating abstraction* (hypothetical psycholinguistic constructs), and a basic *non-commitment to scientific method* (hypothetical eclectic constructs). Unfortunately, these are exactly the specific vices we have inherited from the philosophical period, as they remain the major vices of current philosophy as represented by the school which Wilson represents. Educational research does not need any black-widow marriage with the philosopher at this point. What is needed is a proper understanding of scientific method as this applies to human behaviour, coupled with some sense of relevance.

The Foundation performs a better service to educational research by publishing critical analyses of research carried out by professionals actually engaged in the work, instead of my amateur critics working on the periphery. For example, in the area of teacher education two symposia reflect some of the heartsearchings going on in this area (Chanan, ed. 1972) as well as some of the advances made in the study of teacher behaviours in the classroom (Chanan, ed. 1973). The former is the report of a conference involving several hundred participants who addressed themselves to the problems of organization, co-operation and funding of research into teacher education in Britain today. In a situation of rapid change in the structure of teacher training and education, the conference discussed problems centred on the role of women in teaching, the assessment of student-teachers, teachers' assessments of their pupils and the place of research in the school system.

The second report *Towards a Science of Teaching* (Chanan, ed. 1973) is a collection of articles which review experimental research on teachers and student-teachers. Classroom interactions is the theme. Nuthall and Church describe the analysis of teacher behaviour in terms of a category system which covers the two dimensions of content, or subject matter, and interpersonal control. Their work indicates that pupil participation is not closely related to pupil learning, that the time spent on content is more important for pupil achievement than changes in teacher behaviour, that the amount learned is related to the number of questions asked by the teacher, that telling pupils the answers to questions they don't know has a detrimental effect on the level of achievement, that highly structured questions are more effective than less structured questions which cover less content. The article represents an attempt to develop methods which are maximally responsive to the complexities of the class situation and which will lead to a general theory of the teaching-learning process. Gilbert de Landsheere reports similar work, carried out in Belgium, using a more inclusive system of analysis (incorporating the affective area as well as content and control areas). Wragg reports a Flanders-analysis of almost 600 lessons taught by over 100 student-teachers in secondary schools, classified in nine areas according to the subjects they taught. This report concludes with a critique of the Flanders system and a listing of seven characteristic teaching styles or strategies—lecture, high-speed drill, programming pupils, directive style, disorder (*sic.*), discussion and workshop. This is a pioneer study in that it compares a large sample of lessons, taught by a considerable number of student-teachers, in a great variety of teaching situations, using a standard and well-validated instrument. The main finding was that teachers of English tended to adopt varying patterns, whereas teachers of other subjects, especially language and science, tended to show similar patterns of teaching behaviour.

This review can clearly only act as a sign-post to sources. It is impossible in a brief article to examine the wealth of offerings by a Foundation which has been in existence for more than a quarter of a century and which employs more than 150 staff members. The quickening of interest in educational research over the past decade in England and Wales, with the active sponsorship and funding by a number of new Government agencies, ensures an even more illustrious future for the National Foundation. Under a succession of notable directors since 1946—Sir Peter Innes, Ben Morris, W. D. Wall and the late Stephen Wiseman—the N.F.E.R. has played a key role in the evolution of the present school system in

Britain. Under its present director, Alfred Yates (a name which is automatically associated with the of Douglas Pidgeon, the Deputy Director, in terms of their joint pioneer studies on "over-achievement", on ability-grouping in the schools, etc.) it can be predicted that the National Foundation for Educational Research in England and Wales will continue to set a high standard of workmanship in research of significance not only for Britain, but for those countries whose educational systems derive historically from it.

References

- Biggs, J. B. *Mathematics and the conditions of learning*. Slough: N.F.E.R., 1967.
- Blackwell, A. M. *Current researches in education and educational psychology*. Slough: N.F.E.R., 1959, 1961, 1963, 1969.
- Bouri, Janet. *Too small a stream: A study of grouping in small junior schools*. Slough: N.F.E.R., 1969.
- Chanan, G. (Ed.) *Research forum on teacher education*. Windsor: N.F.E.R., 1972.
- Chanan, G. (Ed.) *Towards a science of teaching*. Windsor: N.F.E.R., 1973.
- Hartog, P., & Rhodes, E. C. *The marks of examiners*. London: Macmillan, 1936.
- Highfield, M. E., & Pinsent, A. *A survey of rewards and punishments in schools*. London: Newnes' Educational Pub. Co., 1952.
- Sanderson, A. E. *Current researches in education and educational psychology 1968-69*. Windsor: N.F.E.R., 1970.
- Sterns, H. H. Curriculum Research II: Curriculum research, and the introduction of a foreign language into the primary school. *Educ. Res.*, 6 (2), 86-103.
- Thouless, R. H. *Map of educational research*. London: N.F.E.R., 1969.
- Wilson, J. *Philosophy and educational research*. Windsor: N.F.E.R., 1972.
- Yates, A. *Grouping in education*. New York: Wiley, 1966.
- Yates, A. *The first twenty-five years: A review of the N.F.E.R. 1946-1971*. Slough, 1971.

John McLeish

BOOK REVIEW

EXTERNAL EXAMINATIONS AND INTERNAL ASSESSMENTS

by Warwick B. Elley and Ian D. Livingstone

Wellington, New Zealand Council for Educational Research, 1972, pp. 192, \$NZ 5.00.

Like many other English speaking countries, New Zealand has recently begun to take a close look at the examination practices used in high schools. The present New Zealand system of externally set examinations combined with some accreditation of high schools (allowing some high schools to recommend candidates for admission to university without their having to take the external examination), has come under some fire in recent years from those who contend that external examinations take away much flexibility from the curriculum. Elley and Livingstone's account of the debate between the supporters of a flexible curriculum and the supporters of external examination, with its accompanying advantages of equality of standards throughout the country, and fairness to individuals, with very few changes, could be a description of the Alberta scene. Because of this, the book is of interest to high school teachers and administrators in the province.

In order to understand the book, it is important to realize that the purposes served by secondary education in New Zealand are somewhat different than in North America. Broadly speaking, high schools in New Zealand have two purposes: to provide a general education for all high school students, and to prepare some students for university. Unlike most North American systems of education, most vocational and technical preparation is done on the job. The examination system that has evolved to meet this dual role of secondary education is complicated by Canadian standards. At the end of Form 5 (roughly equivalent to our grade 10-11), School Certificate exams are administered in 30 subjects for the purpose of certifying the competence of those students who are leaving at this point. For students continuing, the School Certificate Exams are seen as a kind of intermediate goal. The University Entrance Examination is administered at the end of Form 6. It was originally designed as a selection examination for university, but has now begun to take on the qualities of a certificate exam for sixth formers. In 78% of the schools however, authority has been given to the schools to recommend students for university entrance (i.e. to accredit them). Students in an accrediting school who are not recommended for admission may sit the examination with the students in non accrediting schools. Regardless of whether students are recommended through accreditation, or by way of passing the exam, most of them continue into a Form 7 year, at the end of which, they may sit for the University Bursaries and Entrance Scholarships Examinations. All of this means that for university bound students, it is possible to take three externally set examinations in their last three years. Since a student's future is determined in large part by performance on these exams, success on the exams becomes the primary goal for three years of schooling.

In the book, Elley and Livingstone outline several alternate ways of providing some uniform standards for certification and university selection, while at the same time allowing for some flexibility within the classroom. Unlike North America where high school students may continue their formal education at dozens of different *kinds* of institutions, and where any institution may be drawing students from a dozen different educational jurisdictions, New Zealand high school students either go to university or into employment, and universities have to deal in the main with students from a single education system. Thus it makes some sense to attempt to combine school leaving certification with university selection, whereas in North America it does not.

The major solution that is suggested can be described as moderated internal assessment. Briefly, the system is this: teachers rank the students in order of achievement on the year's work, then the scores on a standard reference test are used to determine the relative standings of schools. Final grades are determined by taking the teacher's assigned ranks to one of several tables and converting the ranks to grades on a fifteen point scale. The choice of table is determined by the number of students who receive various scores on the reference test. A good reference test is one that correlates fairly well (.5 or greater) with examination results in each school subject (and university entrance). It should also be an exam that does not control the curriculum in the way that current external examinations do. Among the candidates for reference tests that are suggested and critically examined are the School Certificate Examination (English plus the scores in the best three others), standardized achievement tests, scholastic aptitude tests, and specially constructed tests. A rather intriguing suggestion of using item banks for moderating variables is made, but no hypothetical examples are given to illustrate this procedure.

In general, the book is written for the professional rather than the academic, and so the psychometrician will be disappointed in the lack of an elegant rationale, and in the lack of any evidence that the proposed system is 'fairer' on the average than other alternatives like complete accreditation. No mention is made of other more traditional ways of dealing with the selection part of the problem, as for example Tucker's (1963) models for a central prediction system, but these omissions probably enhance the utility of the book in the long run, and are certainly not caused by a lack of knowledge on the part of the authors. Nevertheless, it would be nice to see a companion volume in which the moderation procedure is presented and evaluated in a more rigorous fashion.

A second, and more significant criticism lies in the restrictive assumption that "teachers have the ability to determine the relative achievement levels of their own pupils with reasonable reliability and validity", i.e. that teachers can rank the students. This level of measurement is all that the moderating system requires, and it is all of the teacher's information that is used. Surely teachers can go beyond this. While it is difficult to provide an assessment of a student's *exact level of achievement*, most teachers can tell you if the achievement of one pair of students is more alike than the achievement of another pair. The effect of using the method described by Elley and Livingstone is to assume that all the students in a class are strung out evenly along the achievement continuum. (This is not quite true since for small groups at the end of the continuum a tolerance interval is allowed). It is not uncommon in average classrooms to have a small number of students who have high (or low) achievement, with almost *no* detectable

differences among them. The moderation system may force a distinction where none exists. Perhaps later models will capitalize on the teachers' ability to go beyond ordinal estimates.

The purpose of the monograph is to provide a summary of the arguments concerning the role of external examinations in New Zealand secondary schools, and to suggest various ways that might be used to phase out external examinations while at the same time satisfying the demands that are presently being served by the current system. As the authors state, "It is hoped that this discussion paper will inform the debate, point to the implications of alternative policies and indicate at which points we need decisions, and where we need further inquiry." It is difficult to see how the authors could have been more successful in meeting their goals.

Reference

Tucker, L. R. formal models for a central prediction system. *Psychometric Monographs*, Number 10, 1963.

Thomas O. Maguire